Project Management

Migration of CSUEB data Infrastructure

Mahima Advilkar
| 10/10/2024 | MGMT658

Introduction - Migrating Student Data Management System

- **Industry** : The higher education sector is increasingly adopting advanced technology solutions to enhance operational efficiency and improve student experiences. With the shift towards digital solutions, institutions must manage vast amounts of data securely and efficiently while complying with regulatory standards.
- **Project Description -** The project involves transitioning the California State University, East Bay (CSUEB) from its existing on-premises Student Data Management System to a modern, fully cloud-based data warehouse. The project will be executed in multiple phases, including assessing the current infrastructure, selecting appropriate vendors, implementing the new system, and conducting thorough testing and training.
- **Project Significance -** The migration of the Student Data Management System is crucial for CSUEB as it seeks to modernize its data management processes and improve operational efficiency. By adopting a cloud-based solution, the university can enhance data accessibility, streamline admissions processes, and ensure compliance with data protection regulations.

Project Scope

Objective	Key Area of Focus	Phases	Technologies	Compliance
Migrate the student data management system of CSUEB Admissions Department to a cloud-based platform. The system stores admissions-related data such as transcripts, enrollment, and admission decisions.	• Data Streaming • DBMS • Compliance	**Phase 1**: Assessing Infrastructure **Phase 2**: Vendor Selection **Phase 3**: Implementation and Testing	• Cloud Data Warehouse • Data Stream Processor • Data Pipelines	• HIPAA • GDPR • PCI DSS • PII • SOC 2

Project Timeline and Phases

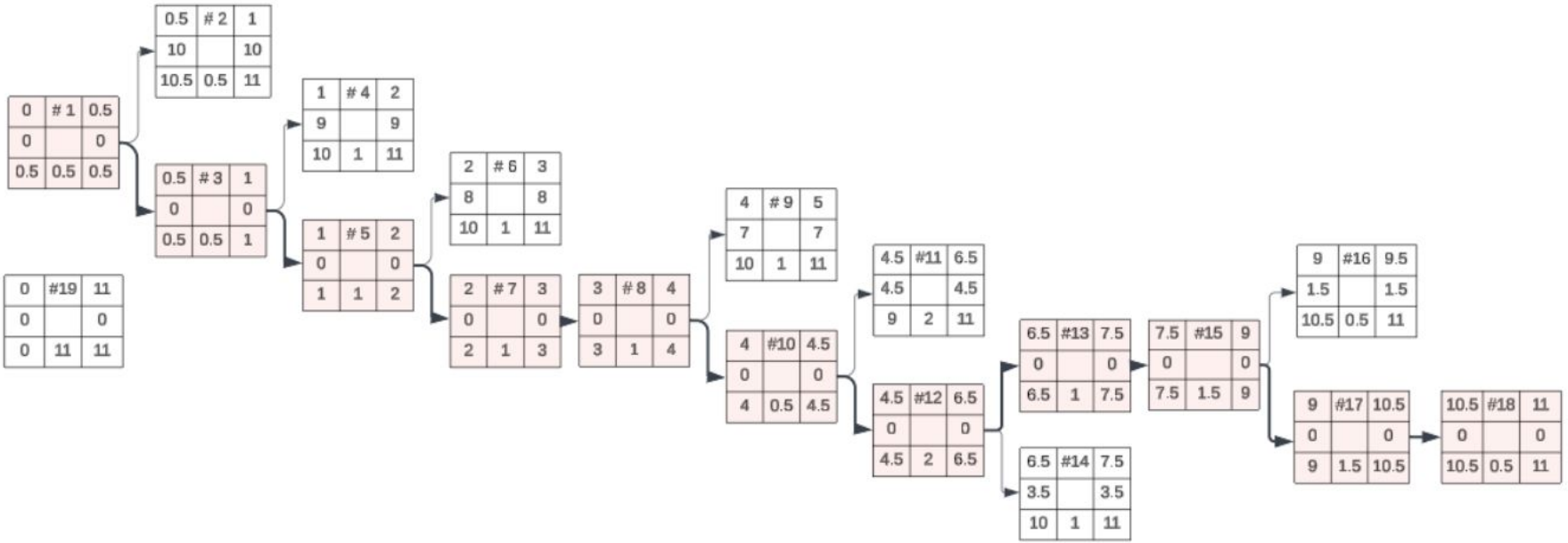
Phase 1: Initiation (Weeks 1-2)	Establish project direction, goals, and key stakeholders.
Phase 2: Needs Assessment and Design (Weeks 3-4)	Assess current system needs, gather requirements, and design, pick the future system infrastructure.
Phase 3: Vendor Selection and Setup (Weeks 5-6)	Select appropriate vendors, set up the infrastructure, and begin data migration.
Phase 4: Testing and Training (Weeks 7-9)	Perform system testing, conduct staff training, and prepare for full deployment.
Phase 5: Final Implementation and Closure (Weeks 10-12)	Complete end-to-end testing, gather feedback, and ensure a smooth project closure with risk management.

Work Breakdown Structure (WBS)

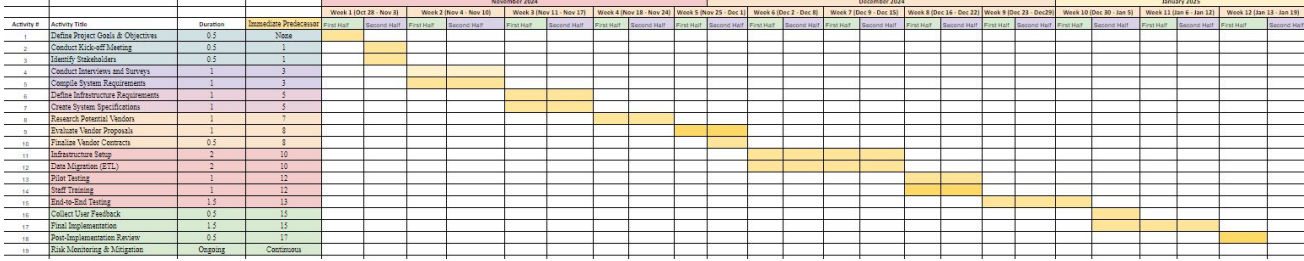
WBS 0	WBS Level	Activity ID	Activity Description	Immediate Predecessor	Time (Weeks)	Other Details
	Project Initiation	1	Define Project Goals & Objectives	None	0.5	Must be completed first, sets project direction.
		2	Conduct Kick-off Meeting	1	0.5	Aligns all stakeholders and defines initial scope.
		3	Identify Stakeholders	1	0.5	Document key internal and external stakeholders.
	Needs Assessment	4	Conduct Interviews and Surveys	3	1	Gather data from departments using current systems.
		5	Compile System Requirements	4	1	Consolidate needs and capacity for the new system.
	System Design	6	Define Infrastructure Requirements	5	1	Specify hardware, software, and network needs.
		7	Create System Specifications	6	1	Detailed specs for server, storage, and network.
CSUEB - Data Migration						
	Vendor Selection	8	Research Potential Vendors	7	1	Identify vendors for hardware and services.
		9	Evaluate Vendor Proposals	8	1	Review proposals based on performance, cost, etc.
		10	Finalize Vendor Contracts	9	0.5	Select vendor and finalize contract terms.
	Implementation & Testing	11	Infrastructure Setup	10	2	Install servers, storage, and configure network.
		12	Data Migration (ETL)	11	2	Migrate data using Extract, Transform, Load (ETL).
		13	Pilot Testing	12	1	Test limited data to ensure accuracy and security.
		14	Staff Training	12	1	Conduct training sessions for IT staff and users.
		15	End-to-End Testing	14	1.5	Test the entire system (performance, security, etc).
	Feedback, Risk Management & Closure	16	Collect User Feedback	13	0.5	Gather feedback from pilot testing.
		17	Final Implementation	15	1.5	Deploy system fully after successful testing.
		18	Post-Implementation Review	17	0.5	Evaluate system performance, gather final feedback.
		19	Risk Monitoring & Mitigation	Continuous	Ongoing	Ensure continuous risk monitoring during the project.

Activity Network Diagram

CP: 1 -> 3 -> 5 -> 7 -> 8 -> 10 -> 12 -> 13 -> 15 -> 17 -> 18



Gantt Chart



				November 2024				
				Week 1 (Oct 28 - Nov 3)		Week 2 (Nov 4 - Nov 10)		Week 3 (Nov
Activity #	Activity Title	Duration	Immediate Predecessor	First Half	Second Half	First Half	Second Half	First Half
1	Define Project Goals & Objectives	0.5	None					
2	Conduct Kick-off Meeting	0.5	1					
3	Identify Stakeholders	0.5	1					
4	Conduct Interviews and Surveys	1	3					
5	Compile System Requirements	1	3					
6	Define Infrastructure Requirements	1	5					
7	Create System Specifications	1	5					
8	Research Potential Vendors	1	7					
9	Evaluate Vendor Proposals	1	8					
10	Finalize Vendor Contracts	0.5	8					
11	Infrastructure Setup	2	10					
12	Data Migration (ETL)	2	10					
13	Pilot Testing	1	12					
14	Staff Training	1	12					
15	End-to-End Testing	1.5	13					
16	Collect User Feedback	0.5	15					
17	Final Implementation	1.5	15					
18	Post-Implementation Review	0.5	17					
19	Risk Monitoring & Mitigation	Ongoing	Continuous					

Data Migration Strategy

Prioritize Essential Data: Identify and prioritize the migration of critical new data required for immediate operations. Data should be migrated in the following priority sequence -

1) **New Admissions Data**: Applicant records for the upcoming academic term. Active applications and supporting documents (e.g., transcripts, test scores).
2) **Enrollment Data**: Data related to newly enrolled students, including class registration and enrollment status.
3) **Historical Data:** Data of passed out and transfer students.

Data Segmentation: Separate essential data from legacy information to ensure smooth processing.

Phased Migration: Migrate high-priority data first, ensuring minimal disruption to ongoing processes.

Validation: Validate new data as it is migrated, ensuring accuracy before handling older or less critical information.

Testing and Go-Live: Conduct thorough tests on newly migrated data before full system implementation.

Resources Needed (Category-wise)

Resource Type	Examples
Technological Resources	Cloud Platform - AWS; ETL Tool - Talend; SQL Tool - MySQL Workbench.
Human Resources	Project Manager, IT Lead, Data Migration Specialist, Systems Architect etc.
Financial Resources	Budget for Software Licenses, Staff Salaries, Vendor Costs - $15,000.
Material Resources	Hardware - Dell PowerEdge Servers; Documentation - User manuals from previous systems.
Compliance and Legal Resources	Data Protection Regulation - HIPAA Compliance Guidelines; Audit Tool - AWS CloudTrail.
Training Resources	Training Program - Online sessions using Zoom; Help Desk Support - Zendesk.
Testing Resources	Testing Environment - AWS Cloud9; Quality Assurance Process - TestRail for test case management.

Risk (Category-wise)

Project Risks

1. **Schedule Risks**: Delays in project phases could push the timeline (e.g., extended vendor selection).
2. **Budget Risks**: Unforeseen expenses may exceed the allocated budget (e.g., increased cloud service costs).
3. **Resource Risks**: Availability issues with team members could impact productivity (e.g., key staff being unavailable).
4. **Stakeholder Risks**: Misalignment among stakeholders may affect support and decision-making (e.g., poor communication).
5. **Compliance Risks**: Failing to meet legal regulations could lead to penalties (e.g., non-compliance with FERPA).
6. **Change Management Risks**: Resistance to the new system may hinder user adoption (e.g., inadequate training).

Product Risks

1. **Functionality Risks**: The new system may not meet user requirements (e.g., missing key admissions features).
2. **Performance Risks**: The system may experience slow response times during peak usage (e.g., high traffic during admissions).
3. **Integration Risks**: Challenges in integrating with existing university systems may lead to data silos (e.g., incompatibility with current databases).
4. **Security Risks**: Vulnerabilities could expose sensitive data, risking compliance violations (e.g., data breaches).
5. **Data Quality Risks**: Inaccurate data migration could result in flawed admissions decisions (e.g., incorrect applicant data).

Rough Project Cost (Total - $275000)

Category	Description	Cost
Personnel Costs	Salaries and benefits for the project duration	$125000
Software/ Licensing Costs	software licenses and tools	$30000
Cloud Services Costs	cloud hosting and services - for storage, data transfer, etc	$40000
Training and Support Costs	training staff and providing ongoing support	$15000
Vendor Costs	Payments to external vendors -consulting, integration support, etc	$25000
Hardware Costs	Hardware purchase - for servers, networking equipment, etc	$15000
Compliance and Security Costs	Expenses related to ensuring compliance - for compliance audits, security tools, etc.	10000
Contingency Costs	A reserve fund to cover unexpected expenses that may arise during the project. (10% contingency reserve)	25000

Progress Monitoring

- **Milestone Tracking**: Progress is tracked against the key milestones outlined in the Gantt Chart, such as project initiation, vendor selection, data migration, testing, and final implementation.
- **Regular Status Meetings**: Weekly meetings with stakeholders (PM, IT lead, vendors) to review progress, discuss roadblocks, and make adjustments to the timeline.
- **Performance Metrics**: Monitoring metrics (task completion rates, resource utilization, data accuracy after migration, and system performance during testing phases).
- **Risk Monitoring**: Ongoing risk management activities, focused on data security, migration accuracy, and system downtime. Adjustments are made proactively based on identified risks.
- **Change Management**: Any changes to project scope, timeline, or resources are carefully reviewed and managed to avoid delays and ensure project alignment with goals.
- **Reporting**: The project manager prepares regular reports on the project's progress, highlighting completed tasks, upcoming phases, and any risks or issues that need resolution.

Conclusion

- The CSUEB Data Migration Project is a comprehensive and structured initiative aimed at modernizing the admissions data management system.
- By following a phased approach—starting with project initiation, progressing through vendor selection, data migration, and system testing—this project ensures a smooth transition with minimal disruption.
- Leveraging cutting-edge technologies, thorough risk management, and precise resource allocation, the project aims to improve data accuracy, system performance, and operational efficiency.
- With dedicated collaboration across departments and clear communication with stakeholders, the project is set to achieve its goals, providing CSUEB with a scalable, secure, and efficient admissions platform for years to come.

Thank You