IT 625 Final Project Case Study: Medical Informatics

Background

Medical Informatics, a leading health services company, embarked on a new product development project. Medical Informatics needs to expand its clinical data warehouse (CDW) to ingest third-party data feeds from wellness vendor and onsite clinic data to incorporate this information to downstream employer group analytics and reporting processes. This expansion will also be used to develop new activity reports to message value on these products.

The nature of the company's business is that it operates in an extremely competitive environment that necessitates fast delivery to market so as to prevent competitor companies from gaining dominant market share with similar competitive products. Therefore, the key success factors of the project were time to market and quality. Cost of delivery was not a major concern.

Scope

The scope of the project was to create a modular software package to handle wellness vendor data to ensure appropriate preventative care is being tracked for members, including the systems changes, the vendor wellness database tables, and wellness vendor reporting. The project was divided into modules consisting of: wellness DB tables, promote tables, and wellness vendor reporting. A project manager was appointed, but has since left due to personal reasons.

Time Scales

The launch date was set as December 21, 2017. The product had to be ready for launch on this date, as all the marketing material would reflect this date and the launch had to precede the launch of similar products from competitors. The project kickoff was May 5, 2017. The tasks that had been completed prior to May 5, 2017 were the business case compilation and approval and the project team establishment.

Technology

The systems development was to be done using the MS Visual Studio programming language and SQL environment, which was new to the development team. The developers were sent on MS Visual Studio programming training two weeks prior to the project start. The developers were used to working in a Java programming environment and had not worked with any MS-oriented languages before. The new wellness vendor reports will integrate into the existing system located behind the intranet. These new reports, unlike the existing reports, will utilize both SQL Server and Teradata. SQL Server will control the security access and parameter selection for the reports. The application will then send the selected parameters to Teradata in order to populate the body of the report.

Infrastructure

Database Servers
- MS SQL Server 2008 R2
- Teradata 14

Reporting Servers
- The system will use an SSRS deployment server.

Development Tools

- MS Visual Studio 2008 Shell
- SQL Server Business Intelligence Development Studio
- SQL Server Management Studio

Business Requirements

The current application will display the wellness vendor reports. The system generates SQL Server Reporting Services (SSRS) reports based on user-selected parameters. Users can choose to view reports in three formats: Excel 97-2003 (XLS), Portable Document Format (PDF), or Comma Separated Value (CSV).

The exported data within Excel or CSV files will contain "user-friendly" headers and not database column headers.

Scripts will execute on a weekly basis to import the following vendor sources into the target system:
- Chip Rewards
- Spire

Scripts will execute on a monthly basis to import the following vendor sources into the target system: MDLive.

Case Study Summary of Events

Business Case Development

The product development department developed the business case for the proposed new product, including projected cost/benefit analysis based on previous similar products and current market share. The business case was reviewed by executive management and approved.

Requirements Definition

The product development department developed the requirements specification for the new product. These requirements were specified based on the understanding level of the project team, which had many years of experience in the company and an extremely good understanding of the systems. Some of the finer details of the requirements, such as the reporting requirements and the final policy document wording, were not defined at this initial stage. The outstanding requirements would be agreed upon during the project, once the users had decided exactly what they wanted in this regard.

Project Team Appointment

John was appointed as the overall project manager. John had been with the company for 23 years and been involved in numerous projects for new product developments in the past. He knows the existing systems intimately and had good working relationships with all the various departments involved in product development and launch. The project team appointed consisted of people from various departments, all of whom had been involved in previous product development projects. Their knowledge of the systems and applications is extensive. After delivery of Module Two, John left due to personal reasons.

Project Kick-off

The product development executive, the sponsor of the project, chaired the project kick-off meeting, held on May 5, 2017. She emphasized the importance of the project to the company, as it would ensure good returns by getting the new product to market before its competitors. She stressed that the delivery date must not be compromised in any way, as this would open the doors for competitive products and the opportunity would be missed. The project manager and the team were asked to get busy immediately with their planning, and a follow-up meeting was set for August 5, 2017 to review the project plans.

Project Plan Development

The project team had been involved in many similar projects in the past, and thus knew exactly what the project entailed. For this reason the plans were based on previous historical information of past projects. The project plans included only the systems-related work. The interfacing to other areas, such as the legal department, marketing, and operations, would be handled by the project manager at the specific time required for their input. Project plans were drawn up using a scheduling tool. The phases and tasks were detailed, but resources were not allocated to the tasks, since resources knew exactly what their role was on the project and which tasks related to them. Task dependencies were not put into the plan, as this made the plan too complex. Dependencies were handled by each team member and by the project manager.

Project Plan Management

Management of the project plan consisted of updating tasks with their percentage complete on a weekly basis. Record of actual hours spent on specific tasks was deemed not necessary. Each resource

gave an estimate of the percentage complete for each task, which was used to update the plan. Resource availability was handled in an informal manner whereby each resource gave feedback on a weekly basis regarding his or her workload on the project and other non-project work responsibilities, such as systems maintenance.

Progress Reporting

Progress reports were produced every two weeks. These consisted of a progress summary, deliverables attained, percent complete, risks, issues, and cost information. (See the most recent Wellness Progress Report below.) Minutes were kept for some meetings. (See the most recent Meeting Minutes below.)

Progress for Period May 5, 2017 – August 5, 2017

Initial progress was good, with all team members working well together. Programming started almost immediately, since the team knew the systems so well that they were able to make some of the required changes immediately. Some issues were identified with the user requirements, since not enough detail was in the requirements document. These issues were resolved between the programmers and the users. Some of the programmers experienced problems when they discovered they were working on the wrong version of the user requirements. This was resolved when the users printed out the current version of the requirements for all the team members to make sure they were all working on the current version.

Progress was not as fast as desired, due mainly to users changing their minds about the requirements. The programmers were very accommodating with such changes and tried their utmost to keep the users satisfied. Unfortunately, the number of changes and additional requirements requested by the users caused the work to fall behind schedule. When some of the programmers complained to the project manager, he said that it was essential that users received what they wanted, so their changes must be accommodated, even if it meant having to work extra hours to catch up.

The programming was also delayed from time to time due to technical problems experienced with the new development environment. The company did not have anyone experienced in the new development software, thus had to rely on vendor support, which was a bit lacking due to their commitments at other companies.

Progress for Period August 5, 2017 – October 5, 2017 (two months before live date)

The sponsor became concerned with the project progress, since she felt there was a risk of not meeting the required delivery date. The programmers were working long hours to try catch up on the project work, as well as doing their required maintenance and problem fixing of the live systems. The legal department said that they may not be able to provide the policy document wording in time for the live date, due to other priorities. They said they may have been able to if they had known about it sooner. The user department said they may have a problem getting the test packs ready for user testing, as some staff were going on leave over the Thanksgiving period.

Initial testing revealed that the performance of some of the modules was very slow. This was resolved to some extent when it was found that some of the programmers had used inefficient coding, as they were new to the programming language being used. There were also a number of bugs reported, one of which causes the product to crash at least once a week. There are numerous change requests submitted by users for enhancements to the product.

John, the project manager, has left, and the project team is in complete disarray, and there seem to be issues between the architect and database administrators on just how the database supports the vendor reports. As of now the two areas are not working together to develop solutions for the issues. There also seems to be a loss of a defined testing strategy, which has cropped concerns with development and user acceptance. There is no existing method of capturing reported issues, or how to handle changes.

Management is unhappy about the project and there is no established communications method to inform them about the project status. The project is over budget by 20%. The vendor is asking for pre-payment in order to deliver the third and final module for the final payment of $75,000, which was 75% of the total vendor cost. The module has not been tested yet. There is no communications plan, no risk plan, no systems implementation plan (to define how system implementation testing is handled), and no total cost of ownership (TCO) fee schedule. There is a conflict within the project team (e.g., team members have conflicting roles, or experience time pressure as a result of working in two positions within the organization simultaneously).

Southern New Hampshire University

Wellness Progress Report

Client	VP Operations	Project Number	W1005
Project	Wellness Vendor	Type of Project	Development
Project Manager	John Current	Reporting Period	Start: End:

1	Progress Summary
	Programming work is almost complete and testing has begun. Unfortunately, it is going to take longer than planned to complete the programming due to changes requested by the users and errors made by the programmers using the new programming language. We are hoping that this time will be caught up by working overtime and reducing the testing time planned.

2	Major Activities Completed <u>before</u> Reporting Period Commenced
2.1	Business case approved
2.2	User requirements document completed
2.3	Programming underway
2.4	Unit testing underway
2.5	Test pack compilation started

3	Major Activities <u>during</u> Reporting Period
3.1	Programming continuing
3.2	Unit testing underway
3.3	Test packs complete
3.4	Implementation plan started
3.5	Changes made per user requests to date

4	Deliverables and Milestones			
No	Description	Baseline End Date	Forecast or Actual End Date	% Complete
4.1	Initial project plan			
4.2	Approved project charter			
4.3	Program code			
4.4	System testing			
4.5	User acceptance testing			
4.6	Go live			
4.7	Post implementation audit			
4.8	Project acceptance sign-off			

5	Risks	Contingency Plan/Actions	Impact (1-10)	Probability (1-10)	Score (I * P)	Actionee	Status
5.1	Delivery date may be missed due to changes in user requirements	Work overtime to catch up	8	5	40	JC	**Open**
5.2	Project team members may take leave over the Thanksgiving holidays	Plan leave into project schedule	7	5	35	JC	**Open**
5.3	Other departments may not have resources to do the policy docs and testing when required	Agree tasks with other departments	8	6	48	JC	**Open**

6	Issues	Impact (1-10)	Actionee	Due Date/ Status	Action
6.1	Changes to requirements requested by the users are causing delays in project delivery	9	JC		Agree final requirements with the users
6.2	Currently behind schedule with some tasks, but should be able to catch up without affecting the scheduled delivery date	9	JC		Work overtime
6.3	Get final policy document wording from legal department	8	JC		Agree date with Legal Dept.
6.4	Make sure Testers are available for required testing dates	8	JC		Agree resources and dates for testing with user departments

7	List of Scope Change Requests				
No	Date	Description	Client Approval	Impact	
7.1		No official change requests to date			

8	Major Activities for Next Period
8.1	Complete programming
8.2	Complete and get approval for project charter
8.3	Start system testing
8.4	Start planning for user acceptance test (compile test plan)
8.5	Fix errors and omissions identified during testing
8.6	Compile and agree implementation plan

8	Budget Tracking					
Task/Phase		Planned Cost (Baseline)	Actual Cost to Date	Remaining Cost	Estimate at Completion	Percent Variance
Wellness Vendor		441,650	230,892	210,758	529,980	20%

Meeting Minutes

MEETING DATE: May 15, 2017

PROJECT: Wellness Vendor
SUBJECT: Weekly Progress
ATTENDEES: Roy Kirk (RK), John Current (JC), Kevin Smith (KS), project team members
APOLOGIES: Sue Barrett (Sponsor)

Outstanding from Previous Meeting's Minutes

Item	Minute	Actionee	Status / Due Date
1.	JC to discuss user requirements changes impact with sponsor	JC	JC could not get meeting with sponsor

Meeting Minutes

Item	Minute	Actionee	Status / Due Date
1.	Testing plan to be drawn up and testers allocated by the user department	JC	
2.	Leave schedule to be drawn up for all project staff to assess project schedule impact	JC	
3.	Legal department to give expected completion date for new policy document wording	JC	
4.	Machine needs to be booked and set up for training of testers and running of the user acceptance test	KS	
5.	Testers to be identified by user departments and allocated for testing period required	SB	
6.	Current problems with system performance of the Java code to be escalated to vendor for urgent resolution	JC	

Scope Change Requests

Item	Change request description	Actionee	Due Date	Status
1.	No official scope change requests to date			

Next meeting: 02/04/2017 (3pm. – 4pm) - Meeting Room 2.3

Southern New Hampshire University

Identified Problems and Solutions

Item No.	Problem Description	Root Cause	Proposed Resolution Action	Proposed Preventative Action for Future Projects
1.				
2.				
3.				
4.				
5.				
6.				

Southern New Hampshire University

Item No.	Problem Description	Root Cause	Proposed Resolution Action	Proposed Preventative Action for Future Projects
7.				
8.				
9.				
10.				
11.				
12.				

Southern New Hampshire University

Item No.	Problem Description	Root Cause	Proposed Resolution Action	Proposed Preventative Action for Future Projects
13.				
14.				
15.				
16.				
17.				
18.				