Alternative Solutions for Installation of A New Data Modeling System

for

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Outdated Data Modeling System from 1968

The data modeling system from 1968 is outdated, and it cannot accommodate 12,500 employees.[1] The old system is outdated and loss of data occurs in all departments. Since there has been a loss of accuracy on daily transactions, TRH has been losing revenue for years. The decision-making criteria defined for purchasing a new data modeling system are based upon current problems, which include three issues: loss of accuracy while TRH's employees perform daily business transactions, the funds allocated for a new data modeling system and installation, and how end-users' productivity will increase given better interaction and information design. TRH is having problems with the data modeling system now in use and daily crashes. TRH also desires a high increase of accuracy in processing, retention of data, and increase of revenue.

Accuracy Issues—Problem

Loss of data has been a problem during the last year. Since errors occurred while processing data for daily business transactions, accuracy and loss of data were highlighted in the Needs Assessment Report and is one of the main issues. Accuracy for TRH means that the data modeling system must perform at over a 98% accuracy rate and retain data from daily transactions without triple entries. Financial loss of revenue in the millions of dollars will continue to occur. The outdated data modeling system needs to be replaced. The reason for lost revenue is that the Accounting Department at TRH has been under billing clients over the past few years. Statistical information was lost, since the system lacked the capability to retain the data or to process data. Accounting reported that billing reports had serious errors contained in them—less hours billed to clients. TRH has limited their choices down to three vendors: IBM, Engineering Design (ED), and Information Technology Systems (ITS). These three vendors all have different accuracy rates, including the use of data books pertinent to accuracy issues.

IBM assessed the current technologies available and made recommendations for team structure and schedule. IBM uses modern software engineering tools and current processes. IBM asserts these will bring accuracy, significant productivity gains, and increased revenue to TRH. The IBM 009-777-4500 chip runs at a 98.8% accuracy rate. IBM's chip integrates three functional systems into one data modeling system. IBM has 13 peripheral units. The data book is 149 pages. IBM uses a data book that has few accuracy issues. IBM includes all the necessary experts while implementing and installing a new system, for example: Usability Designers, User Interface Designers, Information Technology Engineers, Systems Information and Computer Programmer Analysts, and Quality Assurance Code Testers. IBM has integrated tools and software that other competitors do not have, because they are trademarked and patented technologies. The other vendor ED has a different viewpoint on accuracy.

[1] The company has grown from 27 employees to now over 12,500 employees in 2003, and TRH is hiring an additional 2,500 employees within the next few years. TRH specializes in advertising and public relations for Fortune 500 companies; TRH also represents national brands in regional markets, as well as being revenue builders for clients.

ED spends more time on evaluating and simulating the data modeling system. They recommend the Wotorola MPA GIT (WGIT) 7293-009 chip. It runs at a 93.9% accuracy rate. The chip integrates 7 fully functional systems into one data modeling system. ED's interface unit has over 56 peripheral units. The data book for ED is 1,500 pages. ED's admits it may be difficult for end-users to use. Because ED's software engineers use the Ameri-Full MIT (AFM) book, there are increased accuracy issues. They know accuracy issues are inherent in their product. They cannot change that fact. ED does not have these personnel on staff: Usability Designers, User Interface Designers, Information Technology Engineers, Systems Information and Computer Programmer Analysts, and Quality Assurance Code Testers. Their tools are not fully integrated and do not hold many patents.

The other vendor, ITS, provides this information on accuracy: The software engineers worked with the end-users at TRH, to determine specific requirements. ITS recommend the Better Fit MIT (BFM) BFM 7-409-69 chip. The chip runs at a 91.4% accuracy rate. The data book is 1,999 pages. The BFM 7-409-69 chip integrates 15 fully functional systems into one data modeling system. ITS' interface unit has 69 peripheral units. ITS does not have these personnel on staff: Usability Designers, User Interface Designers, Information Technology Engineers, Systems Information and Computer Programmer Analysts, and Quality Assurance Code Testers. Their system is fully integrated. With 69 peripheral units, it increases accuracy issues and loss of function. ITS does not hold many patents and fewer trademarks compared to competitors. Costs and services for each vendor are included below.

Fees and Timelines for TRH

TRH desires increased revenue and higher end user productivity. Installation of a new data modeling system would increase revenue. The new system would pay for itself from increased revenue. The budget that TRH has allocated for the new data modeling system is approximately $950,000. TRH desires to have the project implemented immediately, to be completed in approximately 1 year and 6 months. For the type of work and high standards required, TRH requires a data modeling system that includes the highest rate of accuracy and at the lowest possible cost for installation. Three vendors have provided a breakdown of how long it would take per estimates, costs, and services. Different hourly rates are charged for services from team members that include: needs assessment compilation, computer programming, data modeling and systems, installation, usability testing, training, telephone calls for help, Website design fees, new user interface design fees, upgrades, training manuals and data books, upgrades, hardware, technical writers, usability and information designers, and licensing. Information on costs and services are provided below from IBM, ED, and ITS. Let us start with IBM.

IBM estimated it would take approximately 15 months to install a new data modeling system. TRH desires to have additional experts that include: Senior Information Designers, Senior User Interface Designers, and Senior Usability Designers. The new hardware costs $45,000. There are no licensing fees. The production of a companion Website for end-users will cost $10,000. The

24/7 help-line is at no additional cost to TRH. Data modeling upgrades are at no additional charge to TRH, for the next 20 years. The grand total for IBM is $850,000. The next vendor is ED.

ED estimated it would take approximately 24 months to install a new data modeling system. TRH communicated to ED TRH's need for usability experts on the team. ED explained they do not have usability experts on their team. The new hardware costs $60,000. The licensing fees are $10,000. The production of a companion Website for end-users will cost $15,000. Additional documentation for end-users will cost TRH more money to obtain. The help-line is not free ($65 per a call). This fee does not include upgrades. Upgrades for the next 20 years will cost an additional $100,000. The grand total for ED is $1,600,000. The next vendor is ITS.

ITS estimated it would take approximately 12 months to install a new data modeling system. TRH desires to have usability experts on the production team, however. ITS does not have usability experts at their company. The new hardware costs $30,000. The licensing fees cost $8,000. A companion Website for end-users is not available—ITS does not have the personnel to produce it. Production for the Website would have to be done by another vendor ($5,000 up to $80,000). It appears ITS might have to hire additional outside vendors, which would increase the overall fees up to $800,000 or higher. The grand total for ED is $735,000. Upgrades are at an additional cost of $60,000.

The other important issues were usability and user interface design, including why increased usability would increase end-users' productivity. Let us discuss what IBM says about end-users' productivity.

Increased Productivity for Employees

The value in upgrading is increased productivity for employees. This is defined as increased daily transactions by employees. An increased daily transaction for TRH means that employees do not have to reenter the data two, three, or four times. TRH believes that employees should only have to enter data in the computer one time. Installing a new data modeling system will increase end-users' productivity since employees will not have to reenter data. Because the old system runs too slowly and cannot process daily transactions, TRH is losing millions of dollars in lost revenue. The other issue is that the information, interaction design, and interface design do not meet end-users' needs—in terms of being able to successfully complete a task. The overall interaction design was not expandable with an increase of employees at TRH. The current colors used in the interface design cause psychological stress, including dissatisfaction with a system that crashes daily, slow response time, information design that does not work, and interaction design that does not interact with the database to process desired transaction. The psychological stress has also caused an increase in Workers' Compensation claims are up by 59.2%. The raw data in the report shows a current decrease of end-users' productivity and why

TRH's ability to process data accurately has decreased. IBM concluded that the new data modeling system would pay for itself over a period of a few years. The first vendor, IBM, had these views on end-users' productivity.

Documentation from the Needs Assessment Report from IBM, as well as end-users' scenarios demonstrated a 91.2% loss of data. Fixing the problem by installing a new data modeling system brings productivity up by 74.5%. This is a problem for accounting and successfully completing a billing cycle. End-users stated that the old system is not user friendly. Processing time on the screens and user interaction is at 50 seconds per a transaction. Processing time on the new system is at 1.5 seconds to 3.0 seconds. Nine out of 10 end-users easily got lost and frustrated when using the current navigational system. It took 20-90 seconds up to 10 minutes of end-users' time to successfully navigate. Six out of 10 end-users were not able to successfully complete transactions on the current interface. End user testing was done with new designs for interface design. Testers performed well on moving through the new design with ease. The next vendor, ED, had these views on end-users' productivity.

Productivity is decreased due to daily crashes on the current system and lost data. ED can increase the end-users' productivity by 64.7%. They interviewed end-users and found that the reason why productivity was significantly decreased is due to slow processing times. Interviews with end-users revealed complete dissatisfaction with the current interface design. End user testing was completed on current system. The final results demonstrated that the current system was outdated and slow. They also had trouble completing transactions quickly. Testers completed transactions at 50.2 seconds per transaction. It also took an additional 9.5 minutes for end-users to successfully navigate, to complete a transaction. TRH reported that the system has been crashing almost every day for the last year. The next vendor, ITS, had these views on end-users' productivity.

ITS conducted numerous evaluations of end-users' experiences while the current system was operating. There is a decrease of productivity. ITS can increase productivity by 54.9%. Entries have to be entered in 2 or 3 times, which makes employees frustrated. This equates to 95.6% of loss of data. TRH reported that the system now crashes daily. A better-designed system, as well as an interface design would yield greater productivity. End-users would perform better, since there would be less depression and anxiety. Workers' Compensation fees would decrease. End-users got lost attempting to navigate. Eight out of 10 end-users got lost and frustrated. It took testers 100 seconds and up to 9.3 minutes of testers' time to successfully navigate. The navigational systems overall were not functioning properly.

Let us move on to discuss this project and what is required for completion: timeline, accuracy of chips, cost for implementation, loss of data from old system, processing time from old system, chips recommended, increased productivity from new system, Website, help-line fee, documentation, usability experts, and upgrade fees.

Comparison of Services

	IBM	ED	ITS
Cost	$850,000	$1,600,000	$735,000+
Timeline	15 months	24 months	12 months
Accuracy of Chip	98.8%	93.9%	91.4%
Data Loss (Old System)	91.2%	64.7%	95.6%
Processing Time (Old System)	50 secs.-10 mins.	50.2 secs.-9.3 mins.	100 secs.-9.5 mins.
Chip	IBM 009-777-4500	WGIT 7293-009	BFM 7-409-69
Productivity Up (New System)	74.5%	64.7%	54.9%
Usability Experts	Yes	No	No
Website	Yes	Yes	No
Help-Line Fee	No	Yes ($65 per call)	No
Documentation	Yes	Yes	No
Upgrade Fees	No	Yes	Yes

Variables—Comparison of Different Vendors

The current data modeling system is outdated and cannot accommodate employees. TRH has experienced unprecedented growth within the last few years. The old data modeling system is too slow and does not run with accuracy. Loss of data has occurred throughout the years. Millions of dollars have been lost. Three Assessment Needs Reports were done by IBM, ED, and ITS. Vendors found the current data modeling system was not operating with any degree of accuracy. The different vendors had different levels of accuracy to offer. Recommendations were made for which chip would offer greater accuracy. IBM has Usability Designers on staff, while other vendors do not. The issue of how long it would take ranged from 1 year to 24 months. Findings suggested that employees were not productive, and that data had to be reentered 3 to 4 times. The processing time is very slow on the old system. Workers' Compensation claims are up by 59.2%. Usability studies concluded a need for improved information design. TRH needs to have a new data modeling system installed that will meet the current needs for accuracy, as well as usability improvements, user-friendly documentation, and an affordable system. Vendors' bids ranged from $735,000 to $1,600,000. IBM was the only vendor that would provide free upgrades. It is up to TRH to decide whom they should hire to do the job.