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ELECTRONIC WORKFLOW FOR TRANSACTION-BASED WORK CELLS IN A FINANCIAL SERVICES FIRM

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ABSTRACT

In determining an electronic workflow system, a financial services firm utilized simulation to determine the necessary capital expenditure. Analysis included batching options, Service Level Agreements and Full Time Equivalent allocations and schedules. This information was then processed in transaction-based work cells which were redesigned using simulation. This paper discusses approach, benefits and lessons learned while developing multiple simulation models for an electronic documentation system.

1 CLIENT OVERVIEW

1.1 The Client's Business Challenge

The client is a financial services firm which provides management, administrative, and marketing services. The client expects significant growth in the number of new clients over the next five years. To handle this growth, the client is implementing an electronic workflow system. This system will allow mailed requests from clients to be processed more quickly via a scanned, electronic image.

1.2 The Client's Process Challenge

The project required the establishment and enhancement of an operational plan. They wanted to know the business impacts of pushing work versus pulling work and the capabilities regarding processing transactions under different work configurations. They also wanted to know process performance for designed mail operations, which includes receiving mail, prepping, sorting, batching, scanning and indexing. Key questions addressed included overall staffing of the designed process at volume levels, specific Key Performance Indicators (KPIs) such as staff utilization, headcount, and transaction specific cycle times. Also, addressed was the ability to meet the Service Level Agreements (SLAs), such as scheduled deadlines.

The client has already operated similar image processing in another department for many years. However, their processes differ significantly due to the way that business is conducted have been inefficient and required continuous redesign. The client wanted to implement an efficient design for their division at conception. Previously, the client found it difficult to develop an effective mailroom design due to the complexity of their mailroom processes.

2 APPROACH

2.1 Project Approach

The project approach was a combination of Andersen Consulting Capability Modelling and Simulation (CMAS) methodologies, industry best practices, and program leadership experience. Discrete-dynamic process simulation was a key technique utilized in this initiative. The project approach, detailed in the project work plan, included four major phases of work:

- Develop conceptual models
- Code simulation
- Experiment with business scenarios
- Report simulation results.

The overall project team was divided into two teams. One team modeled Push/Pull Transaction processing and the other team modeled the Scanning/Imaging area. Due to the client's immediate need for answers, the project was divided into three phases. The first phase provided quick, high-level answers for the two models, specifically different scanner hardware configuration and comparison of Push vs. Pull processing. Phase two refined the Push/Pull model and delivered more detailed results concerning transaction processing. Phase three expanded the Scanning/Imaging model and provided detailed results for the entire mailroom. Figures 1 and 2 show graphic animations created for the Push/Pull and Scanning/ Imaging simulation models, respectively.

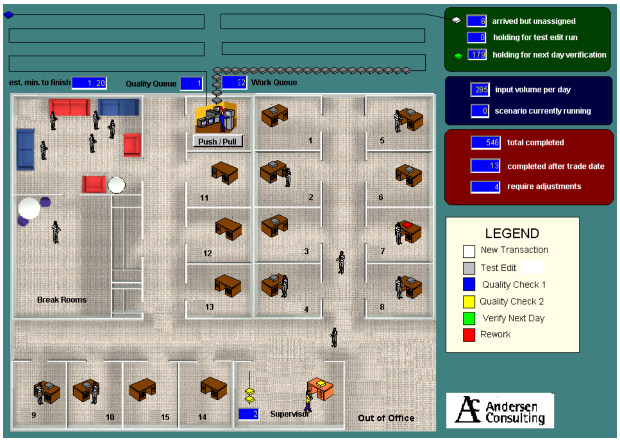


Figure 1: Graphic Animation Created for the Push/Pull Simulation Model

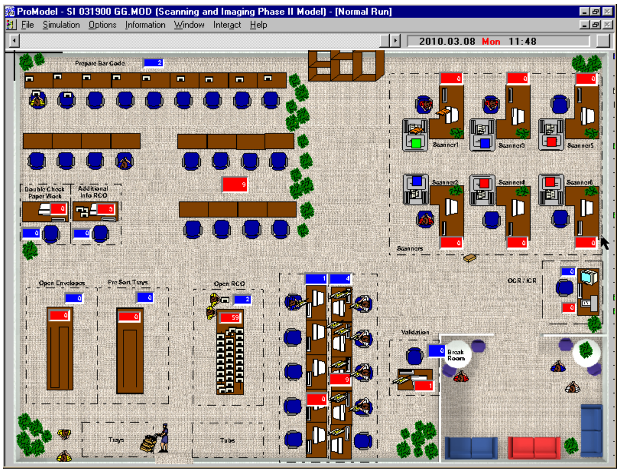
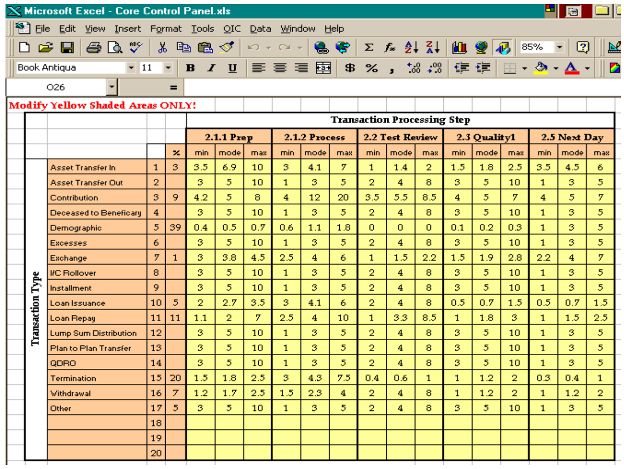


Figure 2: Graphic Animation Created for Scanning/ Imaging Simulation Model

2.2 CMAS Role & Contribution (Including Tools and Techniques Applied)

The CMAS Project Team created spreadsheet interfaces to the simulation models to allow data input for most model parameters and easy control of simulation experimentation (see figures 3 and 4). The main purpose was to provide a user friendly tool which can be transitioned to the client at the end of the project. Benefits of this flexible technique (parameterization) include an easy ability to experiment with numerous combinations of operating scenarios, such as people, process times and success rates. It also provides rapid changing of individual model parameters without the need to search for these parameters in the simulation models. Subsequent output KPIs were extracted from simulation output files through summarized tables contained in the model. These outputs were reported back to the same spreadsheet based "control panels" providing a detailed summary of the results in a familiar environment.



Transaction Type		%	2.1.1 Prep min	2.1.1 Prep mode	2.1.1 Prep max	2.1.2 Process min	2.1.2 Process mode	2.1.2 Process max	2.2 Test Review min	2.2 Test Review mode	2.2 Test Review max	2.3 Quality1 min	2.3 Quality1 mode	2.3 Quality1 max	2.5 Next Day min	2.5 Next Day mode	2.5 Next Day max
Asset Transfer In	1	3	3.5	6.9	10	3	4.1	7	1	1.4	2	1.5	1.8	2.5	3.5	4.5	6
Asset Transfer Out	2		3	5	10	1	3	5	2	4	8	3	5	10	1	3	5
Contribution	3	9	4.2	5	8	4	12	20	3.5	5.5	8.5	4	5	7	4	5	7
Deceased to Beneficary	4		3	5	10	1	3	5	2	4	8	3	5	10	1	3	5
Demographic	5	39	0.4	0.5	0.7	0.6	1.1	1.8	0	0	0	0.1	0.2	0.3	1	3	5
Excesses	6		3	5	10	1	3	5	2	4	8	3	5	10	1	3	5
Exchange	7	1	3	3.8	4.5	2.5	4	6	1	1.5	2.2	1.5	1.9	2.8	2.2	4	7
I/C Rollover	8		3	5	10	1	3	5	2	4	8	3	5	10	1	3	5
Installment	9		3	5	10	1	3	5	2	4	8	3	5	10	1	3	5
Loan Issuance	10	5	2	2.7	3.5	3	4.1	6	2	4	8	0.5	0.7	1.5	0.5	0.7	1.5
Loan Repay	11	11	1.1	2	7	2.5	4	10	1	3.3	8.5	1	1.8	3	1	1.5	2.5
Lump Sum Distribution	12		3	5	10	1	3	5	2	4	8	3	5	10	1	3	5
Plan to Plan Transfer	13		3	5	10	1	3	5	2	4	8	3	5	10	1	3	5
QDRO	14		3	5	10	1	3	5	2	4	8	3	5	10	1	3	5
Termination	15	20	1.5	1.8	2.5	3	4.3	7.5	0.4	0.6	1	1	1.2	2	0.3	0.4	1
Withdrawal	16	7	1.2	1.7	2.5	1.5	2.3	4	2	4	8	1	1.2	2	1	1.2	2
Other	17	5	3	5	10	1	3	5	2	4	8	3	5	10	1	3	5
	18																
	19																
	20																

Figure 3: Example of the Spreadsheet Interfaces to the Push/Pull Simulation Model

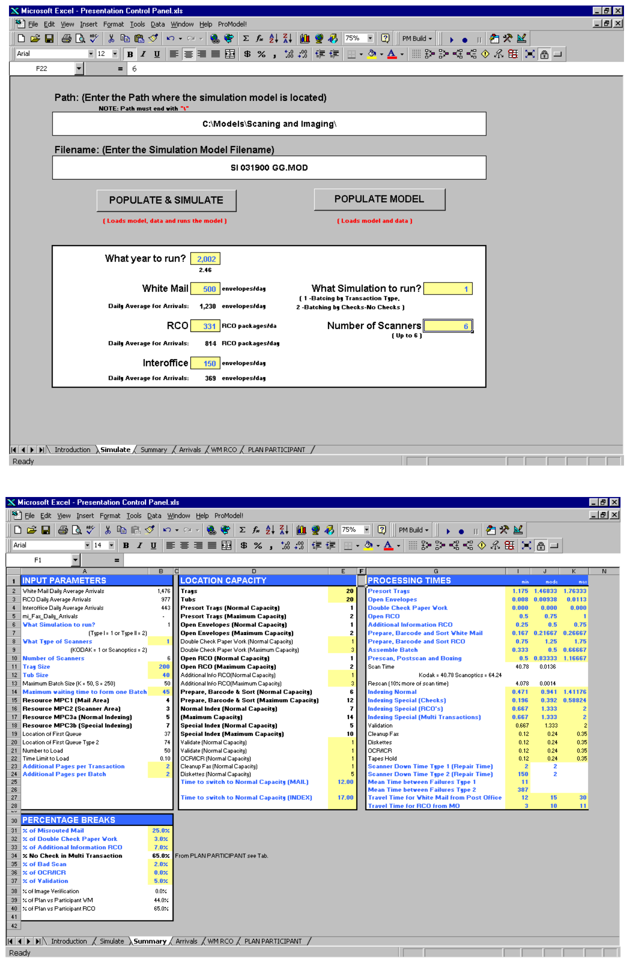


Figure 4: Example of the Spreadsheets Interfaces to the Scanning/Imaging Simulation Model

A drawback to this approach, however, is that too much flexibility can be built into the interface, thus increasing difficulty for client understanding when transitioning the model. This is because the client receives more capabilities than they will need or use. Careful planning should be done to balance the parameterization capability which a client receives during transition of the simulation models.

Prior to CMAS arrival, the client had collected and prepared a large amount of data which aided in the development of the conceptual model Additional process related data was collected using statistical sampling techniques. The CMAS Team prepared a data collection plan and data was collected by Subject Matter Experts (SMEs) over a two day period. Random sampling of current transaction processing was used to determine transaction type percentages.

3 BENEFITS

Modeling and simulation enables better understanding of the customer experience, process performances and staffing inter-relationships. The CMAS Team brought clarity to difficult internal debates and helped develop a model which can be utilized repetitively to aid the decision making process as system changes occur.

Generally, CMAS results showed the balance between SLAs, costs, staff utilization, and process performance. For the Push/Pull simulation model, the CMAS Team evaluated independent operational scenarios for processing transactions. Results showed which scenarios were more capable of meeting required SLAs. KPI results presented to the client included:

- Full Time Equivalent (FTE) or employee utilization
- transaction cycle time
- trade-date violations (figure 5)
- and volume of daily unassigned transactions.

Figure 5: Trade Date Violations by Scenario for Push/Pull Simulation Model

For the Scanning/Imaging simulation model, the CMAS Team developed a simulation model which accounted for projected growth in multiple years of operation and determined the incremental increases in resources and the correct balance of scanners and FTEs to meet SLAs. The team also determined the advantages and disadvantages of batching by different batching scenarios. Specific results showed which years the client should purchase additional scanners and what should be the appropriate annual staffing levels (see figure 6). CMAS results also showed the client could save at least $450,000 annually from their initial resource estimates.

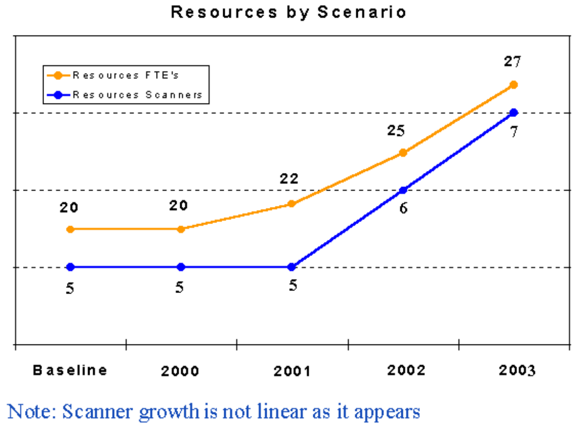


Figure 6: Incremental Increases in Resource for FTEs and Scanners

4 LESSONS LEARNED

4.1 Scope Management

Making model changes late in the project lifecycle, such as changing model input parameters, can cause wasted time and effort. Investing more time early in the project lifecycle developing the conceptual model and securing SME buy-in will save time during the coding and experimentation phases. Also, when simulation is used to aid in the decision making process of the system, control of the scope and complexity of the simulation model can be easily lost. This can result in a more complex and sophisticated model which adds little or no value to the output of the simulation. Therefore, its is necessary to work constantly with the design team and/or decision makers to manage their understanding of the model and agree on solutions which satisfy their needs and objectives. It is also necessary to allow flexibility in the workplan to accommodate changes in client needs and objectives during the project.

4.2 Client Expectations

To achieve successful project outcomes, a client's expectations must be effectively managed too. The CMAS Team was particularly sensitive to client needs and maintaining a suitable presence at the client site. However, CMAS methodology necessitates working away from the client during the programming, verification, validation, and experimentation phases. Previous CMAS projects have proven to be more successful when the team is not subjected to interruptions typically associated with working at the client site. Therefore, expectations about CMAS methodology were established immediately with this client during initial meetings. Because the CMAS Team set expectations early, the client was comfortable with team members working away from the client site during these phases of the project.

4.3 CMAS Team Dynamics

Each of the CMAS Project Team members came from different local Andersen Consulting offices: Chicago, Philadelphia, Tampa, and London. This broad geographic structure required special considerations for working together. While not working at the client site, the team worked effectively by either rotating travel to each local Andersen Consulting office or working virtually from home. This enabled team members to reduce necessary travel yet maintain normal progress toward goals. Daily communication between team members was essential for resolving issues and executing work according to the project workplan. Even more important were regular communication with the client to ensure they were comfortable with team progress.

5 CONCLUSION

Modeling and simulation enabled the client to better understand the customer experience, process performances and staffing inter-relationships for their proposed electronic workflow system. The CMAS Team brought clarity to difficult internal debates and helped develop models which can be utilized repetitively to aid the decision making process as system changes occur. The Push/Pull simulation model showed which independent operating scenarios were more capable of meeting required SLAs. The Scanning/Imaging simulation model indicated correct balance of scanners and FTEs to meet SLA's and determined the amount of incremental increases in resources based on expected annual volume increases.

The team learned how making model changes late in the project lifecycle can waste time and effort. Investing more time early in the project lifecycle developing the conceptual model and securing client buy-in will save time during the coding and experimentation phases. Also, when simulation is used to aid in the decision making process of the system, the scope and complexity of the simulation model can be needlessly increased. It is necessary to work constantly with the design team and/or decision makers to understand and manage their expectations and agree on solutions which satisfy their needs and objectives. Finally, it is important to regularly verify if client expectations are being met. An open and proactive communication is always the best way to ensure the success of a project.

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