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REVOLUTIONIZING ENTERPRISE CONTENT MANAGEMENT WITH DISCRETE-EVENT SIMULATION

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ABSTRACT

Westfield Insurance is undergoing unprecedented change to its organizational and technological processes for claims. In an effort to improve the customer experience and increase adjuster efficiency, the organization is implementing a paperless environment for claims documents. Converting paper documents to electronic content is the responsibility of the Enterprise Content Management (ECM) department. The ECM department needs to radically change in order to meet a new service level with an 80% increase in volume. A discrete-event simulation is used to model the current and future state business processes and achieve the objectives of improving existing efficiency and prescribing people, processes, and technology to meet future demand. The simulation and business impact are discussed.

1 BACKGROUND

A significant milestone of Westfield's claims process transformation is the implementation of the Electronic Claim File (ECF). The objective of ECF is to enable a paperless environment for claims handling; integrating the storage, search and retrieval of all claims documentation.

Conversion of paper to electronic content will be the responsibility of the ECM department at Westfield. ECM is a centralized team that scans, validates, and imports documents. The majority of the current ECM work is back-end; therefore, completion of the work does not delay business processes and the team does not handle claims mail. Once ECF is operational, all claims mail will be scanned, validated, and imported by the ECM team prior to being presented to the claims adjuster. This will be a significant change to the ECM team, as it will increase their volume of work by 80% and will place them in a position of being a bottleneck for time sensitive claims documents adjusters need. The ECM team will also be required to meet a Service Level Agreement (SLA) for document conversion measured in hours compared to no SLA currently.

Two of leadership's desired outcomes for the analytics project were to streamline current processes and create the ability to test 'what-if' scenarios. Other considerations included staffing needs and adjustments to current hours of operation, improving throughput and evaluating new scanning machines for automation opportunities.

The authors determined that a discrete-event simulation model of the ECM team's current and future state processes was needed to achieve the business objectives. The simulation project was broken into three components. The first step was to conceptualize the whole ECM system including both people and system resources, as well as produce the current and future state process maps. The second was building and validating the simulation model. Finally, the model was used to analyze and conduct experiments in order to determine the best solution based on constraints and requirements.

2 THE SIMULATION

Conceptualizing the model began with facilitating process mapping sessions with the subject matter experts within the ECM unit. Developing the current state processes revealed the levels of complexity and dependency within the ECM unit, including seven different channels of work, batching and stacking of documents, scanner malfunctions, and work volume flexibility by employee.

Future state processes were also developed for claims mail, including proposed processes to use new scanning technology. The prospective new technology combined the opening, preparation, and scanning of mail into one workstation and changed the process from bulk to sequential processing.

Rockwell Automation's Arena simulation software was used to model the ECM workflow due author familiarity and three-dimensional animation capability. The simulation model was coded, verified, and animated. Cycle time was validated for all seven channels, with a ninety-five percent confidence interval overlapping for actual average and model average cycle times.

3 BUSINESS IMPACT

The simulation model was used to experiment with current state process improvements and to test the implementation of the future state process for claims mail. The model improved current state process by identifying opportunities to reduce rework when documents are incorrectly uploaded.

Numerous future state experiments were executed to test people, process, and technology options prior to handling claims mail. Results showed the new workstation scanners reduced the average cycle time of opening, prepping, and scanning by over ten percent and marginally increased throughput. The model also highlighted that the number of image recognition servers needed to triple to avoid being a bottleneck with the new workstation scanners in place.

The model showed that the current staff would need to more than quadruple to process all of the claims mail and meet the proposed SLA. The ECM leader took this information to the claims department and was able to renegotiate the original SLA from a specified number of hours to same day service. The renegotiated SLA changed the future staff need to double the current amount. The impact was a significant reduction in future staffing cost and the elimination of the gap between service expectations and ability to deliver.

Scheduling was another avenue thoroughly tested to help increase efficiency and reduce cost. Results showed that staff could be scheduled on a part-time basis for most days by optimizing multi-role assignment of the same employee.

Lastly, the future state process maps developed for the simulation were adopted by the ECM team as accurate representations of the final process, and model insights will be used to finalize staffing and technology decisions.

4 CONCLUSIONS

Discrete-event simulation was an excellent prescriptive analytics technique for modeling the business processes of an enterprise content management department. It enabled efficiencies to be gained in the current state process and also provided optimal solutions to future state demands, all without impacting existing customers, employees, or performance metrics. Complex system interactions, variability, uncertainty, and constrained resources were accurately modeled in a way that no management spreadsheet solution could possibly imitate.

Project sponsorship from the ECM leader was critical. Early engagement allowed the authors enough time to capture requirements, prepare data, build and validate the model and conduct experimentation. Discussions with leadership were more productive based on management pull of the project. This enabled creative ideas to be conceptualized, rendered in the model, and tested, giving management the ability to plan and prioritize options for implementation.