



CASE STUDY

How business intelligence solution is aiding the decision making at Revenuemed

Revenue cycle leader uses a combination of Open-source and proprietary tool to improve turnaround time.

Revenuemed Inc is the global leader in healthcare-related business process outsourcing, offering distinctive value to all participants in the healthcare revenue cycle including both providers and payers. RevenueMed is headquartered in Atlanta, GA, with captive production centers in India.

The outsourcing office situated in Trivandrum, India employs close to 3000 employees consisting of data entry staff, quality analysts, supervisors and the management team. The facility works round the clock to convert paper based remittance advice (EOB) to electronic ANSI 835 transactions.

Challenges

The challenges for the management are real-time. The work arrives in batches; for any particular client, the volume of batch could be anywhere between 10-50 and each batch contains 10,000-50,000 EOBs. These EOBs are scanned images of the paper based Remittance Advice. These are then converted into electronic remittance advice format by keying the information into an application that internally converts it into the EDI 835 format.

The batches have to be processed within the contractually agreed turnaround time (TAT). Depending on the client this could be anywhere between 24 hours to 48 hours. Such huge volumes of EOBs combined with close to 99.5% accuracy and zero tolerance

for TAT misses means that the management has to be equipped with close to real-time information to take corrective or preventive decisions.

Sometimes the batches have to be completed on priority, this requires that resources have to be allocated from the already allocated pool of resources. To aggravate the decision making, resources might already be working on batches nearing TAT. Supervisors have to be consulted to understand the volume of work pending and load on resources. Often this information is not readily available and requires a visit to the operations floor.

The facility operates round the clock. Employees work in shifts and when employees/supervisors leave the shift, they have to handover the status to the next supervisor in shift. It is possible that the status updates are not 100% accurate. Management then has to base decisions on a combination of intuitions and experience.

With close to 15 big accounts as clients and each with numerous service providers, the volume is huge.

Solution

1 Tools

Ruby Software, provided a solution based on open source business intelligence tool (**Pentaho 4.4** PDI) and a proprietary reporting tool.



Ruby Software had earlier developed a reporting dashboard based on the Pentaho 3.9 platform for invoicing, quality reports and productivity reports used by the operations team and data analysts to evaluate employees, identify training needs, appraisals and for processing payrolls.

The project itself is a shift from the usual industry practice of using either open source tools or proprietary tools. The idea was to leverage the strengths of the open-source and proprietary tools, with an eye towards the licensing cost. The system leverages heavily on the extensive ETL capabilities of Pentaho 4.4 for the following processes

- Pulling data from a number of production databases and creating a dashboard DB.
- Automating mailers to management as soon as the dashboard is updated.
- For identifying the incremental data.

Considering the complex decision making required, it was understood that the report has to be available in the most simple yet graphically rich format for ready consumption. The reporting UI has capabilities to render reporting data in various chart and tabular formats along with power to export data to excel, PDF and image formats. It also has options to slice and dice and drill down data directly from the UI.

1 Reports

The reports provided to the operations unit are

- **Batch Summary Report:** The report helps to understand the current status of batches. Question like how many batches have been allocated, how many are output ready, how many are in processing status , accuracy level of batches etc are answered. Using the UI, managers can easily delve into a problem area and take real time decisions.
- **Worklist:** The report provides details on the number of EOBs that have been processed under a batch, status of batch wrt to TAT, QA status of batches etc. This provides insight into changes in volume of eobs and monitor the quality.
- **Inbound Report:** The report provides information on when the next batch is expected from client, actual arrival time of

the batch etc. This allows management to plan resource allocation.

2 Near Real Time

The reporting database is updated every 30 minutes by pulling incremental data from production database. Pentaho PDI jobs are scheduled through a cron job to fire every 30 minutes. The ETL jobs have been programmed with the capability of fail-over, so it can easily recover from unexpected failure. This also means that that every time such a recovery is in process, the system doesn't reload already loaded data instead incrementally loads data based on the last successful run.

Considering the volume of EOB data that the business deals with daily, the incremental load strategy ensures that the ETL process finishes within the 30 minutes time gap. Additional performance tuning steps have also been successfully employed so that now the business is looking at closing the 30 minutes interval to a shorter 15 minutes run.

Results

- **Managing multiple clients:** Prior to incorporating the system, it was a tedious task to consolidate data from different clients. Data analysts would spend hours before a review meeting. Now; the meetings happen as usual plus reports are generated on the fly. Pie charts, line charts, tabular representations every format for that matter is generated in simple clicks.
- **Eliminating human intervention:** With lesser manual interventions there are no ad-hoc meetings, last moment fuzzy report preparations or in-numerous email threads on status updates.
- **Faster decision making:** The management now spends more time analyzing data and forecasting future businesses as compared to spending time on the floor with supervisors.
- **Confidence in technology:** When processes were human driven , there was always a tendency to cross check the data manually. Not anymore. Time saved is revenue earned.