

# State of Washington Department of Revenue Increases Tax Revenue by leveraging STG's Business Intelligence & Big Data Analytics Practice



**SYSTEMS TECHNOLOGY GROUP, INC. (STG)**

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⋮ **CASE STUDY**

### **Customer Business Overview:**

The State of Washington Department of Revenue's mission is to fairly and efficiently collect revenues and administer programs to fund public services and advocate for sound tax policy.

### **Project Business Description:**

The Washington State Department of Revenue had an existing data warehouse with tax accounting information. A set of reports had been developed to access integrated data from multiple DOR applications and incorporated third-party data to assist in identifying non-filers and significant underreporting by companies doing business in the state.

STG was contracted for creating additional enhancements of the TCDW with the introduction of Tax Reporting Account (TRA) payment information into the data warehouse. To further assist the various DOR divisions that access the TCDW database, the addition of TRA payment information into the data warehouse will provide further consolidated information and to fulfill improved reporting needs that will aid all the various divisions' users of this database.

By combining TRA payment information with TRA reporting and assessment data, users will have a complete set of information to prioritize collection activities, enhance audit selection processes, and provide payment information that can be used as a management tool for analyzing accounts receivable trends and patterns. The payment data will also allow users to identify trends for the early prediction of taxpayers that may file bankruptcy and increase the likelihood of collecting on delinquent accounts.

The WA DOR project iteration 3 will also enable history of key fields in the Accounting dimension by following the Slowly Changing Dimension Type 2 methodology.

### **STG Solution Overview:**

STG was responsible for providing design-to-end solution for this project. STG was responsible for application development life cycle activities such as analysis, technical design, construction, testing and deployment. STG's scope included the development and implementation of Extraction, Transformation and Loading (ETL) components for the SCD2 history logic for the accounting dimension and for the payment subject area, the modification and testing of associated accounting reports in a Business Objects/ webi environment and the development and implementation of new payment subject area Reports. The data warehouse and associated business intelligence solutions catered to the requirements of key DOR divisions such as Audit, Compliance, and Research etc.

### **Technical Solution Overview: Overview**

STG team was involved in validating the iteration 3 design documents and identified solutions to issues in the design. STG team was also involved in requirements analysis and design of new business requirements once the implementation of iteration 3 was complete.

The source database was a Tandem Mainframe system. The target data warehouse was a SQL Server Data Warehouse. Extraction, Transformation and Loading packages were developed using SQL Server Data Transformation Services (DTS). These involved identifying the correct data modeling for the warehouse, implementing SCD2 logic using Checksum() function, creating extraction packages from source to a staging SQL Server data warehouse and then developing and implementing stored procedures to transform staging data and to load to the dimension and fact tables in the data warehouse. In a few instances, one time loading of data was performed.

The compliance division used a tool to perform soft-matches of DOR and Federal Tax data in order to identify potential non-filers. This process used a tool called SSA developed by Identity Systems. There were some issues with an earlier implementation producing too many false positives and false negatives. STG team reviewed the earlier implementation and worked with the vendor (Identity Systems) to develop a comprehensive design that will eradicate the issues. The implementation was not in STG scope of work but most of the design was tested in the form of proof of concept tests using the version 2.5 of the SSA Name3 product. STG team worked with the DOR IS Technical Lead and the DOR Compliance Manager to review requirements and test the design. STG team also provided a creative solution to modify the associated ETL batch processes.

The existing BO reports that directly queried the accounting tables were modified to account for the SCD2 logic. All the reports were tested to ensure the fact tables pointing to the accounting dimension table did not have any regression effects. New payment reports were developed using Business Objects and then published to webi.

STG team conducted System/Integration Tests, Performance Tests and User Acceptance Tests. Test Scripts were developed using STGPRIDE test tracker and Compuware's testing tool set. Test case runs and defects were tracked and quality metrics analyzed in order to measure the progress of the project.

#### **Business Results:**

STG completed the project on time and provided a comprehensive of analytical tools & reports for WA-DOR to conduct their data research. An internal assessment revealed the following critical business metrics:

- Identification of additional tax revenue increased by 12% in the year following the deployment
- Collection of tax revenue increased by a significant 27% in the year following the deployment.