Revenue Evaluation And Decision Support (READS) System

Title of Nomination: Revenue Evaluation And Decision Support (READS) System

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Job Title: Project Manager

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Kentucky Revenue Cabinet (KRC)

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Executive Summary

Promoting voluntary compliance in an equitable fashion is the over-arching objective of the Kentucky Revenue Cabinet (KRC). Implicit is the objective that taxpayers can interact with KRC with the minimum effort required to meet their obligations to the Commonwealth. Many of the recent and current initiatives of the KRC (electronic filing, electronic funds transfer, interactive voice response, predictive dialer, and the Modernized Front End (MFE)) address simplification of information and payment transactions.

READS focuses on reducing the cost of understanding the taxpayer’s true obligations. In essence, once taxpayers create nexus and make taxable transactions in the Commonwealth, they incur tax liabilities as laid out in the statutes; they implicitly sign a “social contract” with the Commonwealth. However, information and interpretation is required to realize how the statutes apply to particular sets of transactions made by those taxpayers. Much of what we call taxpayer assistance and compliance seeks to clarify the terms of this social contract.

Regulations, forms, instructions, Web pages, etc. are used to provide general assistance and guidance toward compliance. However, the majority of taxpayer assistance and compliance is undertaken on a case-by-case basis. The unit of work for most employees at the KRC is the telephone call, the letter, the return, the bill, the audit, or the collection case. As such, our perspective is often limited to individual situations, perhaps with an intuition that many cases are, in fact, similar, and can be handled more efficiently in groups, but with little hard evidence of the exact nature or extent of the similarity.

This focus on the individual case derives in part from a lack of access to information. Information systems traditionally emphasized supporting transaction processing and were not designed to create data sets from which to easily pull and analyze information. Emerging technologies have reduced the cost of access to data created in these systems. Furthermore, improvements in analytical tools have made reporting and query functions more user-friendly. Regulatory agencies throughout the world are now placing more stock in the quality of data and the value of information. In his book, *Imposing Duties*, Malcolm Sparrow suggests: “Risk identification, prioritization, problem solving and impact assessment require information, not mere data. They require a shift in focus from the handling of data to the manufacture of information products.”

The objective of READS is to equip KRC staff with the tools and the knowledge to transform existing Commonwealth data, to augment internal data with external data, to evaluate the

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transformed data, and to fashion the data into useful information products. READS will provide the tools for managers to effectively change the priority of work and eventually, the types of work employees perform. Through the use of tax-specific decision support applications and Web enabled technologies, KRC staff will have easy access to meaningful information. Cases, and even programs, can be prioritized according to measures that are in line with the KRC’s mission, targeting assistance to segments of the public with similar compliance challenges or information needs. In short, READS seeks to overcome problems associated with the quality of KRC’s data, access to KRC’s data, and the creation of information from KRC’s data, in order to more effectively pursue KRC’s mission.
(A) Description of Project

READS is part of the KRC’s Kentucky Integrated Tax Entity System (KITES) project. Its purpose is to develop, extend and maintain a data warehouse and related data marts for long-term strategic planning purposes. READS is intended to provide information that will ultimately better serve taxpayers and constituents such as legislators and administrators. READS will support decision making by more easily integrating data and by making information more readily available.

As one of the first Strategic Alliance Services Requests, a Statement of Project Work was released in August 1999, and the Commonwealth partnered with Covansys (formerly know as Complete Business Solutions, Inc.) in November 1999 to build the first iteration of READS.

We mutually decided to use an iterative development approach for READS. Iterative development is an approach that builds the warehouse in a series of related but independent phases. Each phase (or iteration) is focused on gathering and storing data from a single or small number of source systems into the warehouse. The iterative approach reduces the time required to make available useful data in the warehouse. This approach reduces the risks of implementation and accelerates the realization of benefits to the organization.

The first iteration is the longest of several iterations needed to complete a warehouse’s development. There are a number of one-time and first time activities such as learning new skills and establishing procedures and controls specific to data warehousing. As the process becomes more familiar, it also becomes quicker to perform in future iterations. A typical iteration is planned to take no more than 6 months. The data warehouse development iterations may also overlap. Activities on two or three iterations may take place at the same time. For instance, gathering the business requirements for the next iteration can begin at the same time as the testing and the final stages of implementing the current iteration.

The technical architecture for the READS data warehouse is an array of COTS hardware and software components. The components were chosen with scalability and flexibility as the main considerations within the Commonwealth’s Information Technology Enterprise Standards. The hardware and software selected allow for growth in volume of records and flexibility in defining and adding additional data sources. The consistent use of hardware and software components across all Commonwealth warehouse projects limits the skill sets necessary to support such efforts. The major components are:

**RDBMS - ORACLE 8i** database has been designed to support large database for data warehouses. Specific functions have been built into ORACLE 8i to support typical warehouse queries, aggregations and dimensional data structures. These functions will support the increase in size and complexity that will occur over the development
iterations of READS. Oracle Enterprise Edition is an approved RDBMS in the Information Technology Enterprise Standards.

**Front-end Tools** - MicroStrategy has been recognized in the industry for its scalability. MicroStrategy has successfully supported data warehouses that have varied in size from a few gigabytes to the multi-terabyte range. Using a four-tier architecture and WEB based delivery with thin-clients; MicroStrategy can support a growing user-base for READS.

**ETL Tool** - Informatica represents the industry’s leading edge in extract, transformation and load (ETL) tools. Scalability has been one of the tools’ greatest strengths. Informatica has been designed to support multiple sources of data, multiple targets of data and in multiple formats.

The architecture proposed for the READS Data Warehouse supports a multi-tier and thin-client architecture (web-based access). Multi-tier architecture provides the scalability needed to support the growing size and complexity of a data warehouse. Web-based access provides an easy-to-use interface and allows the expansion of the user-base in a very flexible manner.

The fundamental objectives of the READS 1st Iteration are to:
- Build a solid infrastructure that is flexible, scalable and open enough to support the long-term needs of future iterations;
- Learn and understand data warehousing tools and methodologies;
- Focus on well defined business problems that can be resolved with short iterations of six months or less;
- Achieve significant knowledge transfer from the vendor partner to the Commonwealth so that the Commonwealth can become self-sufficient; and
- Leverage data warehouse skills across Commonwealth agencies.

The READS Project is meeting the objects above and is within the original budget for the 1st Iteration. This success is largely due to the true partnership formed between Covansys and the Commonwealth, and the commitment and flexibility of the joint project team to do whatever it takes to get the job done.

The READS 1st Iteration focuses on a single source system, the Compliance and Accounts Receivables System (CARS) and was deployed on March 6, 2001 with seven full months of production data. We are currently in the analysis and data quality assessment phase for the second iteration.

**(B) Significance to the Improvement of the Operation of Government**

- The ability to leverage data warehousing knowledge and skill sets gained from this project as well as the decision support tools employed across all Commonwealth agencies.
Improved analysis of complex data from multiple sources will benefit the Commonwealth in several ways, such as:
- Better and more efficient ways to analyze the potential impact of changes to policy and statutes.
- Easier access to stored data to provide a historical perspective when analyzing policy and procedure options.
- Reduced research time responding to taxpayer and legislative inquiries.
- Improved confidence in the Commonwealth’s ability to provide reliable answers to taxpayers, legislators and other agencies by building a track record of timely, accurate responses to information requests.

Reduced cost of compliance to taxpayers and to the Commonwealth. Examples include:
- Improved data quality leading to improved service to taxpayers.
- User-friendly tools allowing more direct access to data.
- Improved service to taxpayers by focusing education, compliance, and assistance efforts on areas of common mistakes, errors, and other problems.

Improved effectiveness by:
- Improving communication through the use of common terminology and data sources.
- Identifying changes in tax receipts and understanding the cause of the changes.
- Minimizing the impact of personnel changes by sharing knowledge throughout the organization.
- Providing job enrichment for employees by exposure to new technology, training, and the development of new skills.
- Standardizing, refining and validating enterprise-wide business rules.

(C) Benefits to be Realized by Service Recipients, Taxpayers, Agency or State.

Three Examples of the Potential Benefits of READS:

The following testimonials by John, Lisa, and Rafael are fictitious examples of the potential benefits to give readers a sense of the desired outcomes the Commonwealth expects from READS.

John:
I am a manager in the Division of Collections at KRC. After the first phase of READS in which KRC was able to evaluate the efficiency of its compliance programs, we found that fewer non-collectable bills were being generated. Among our active bills, however, we still faced the problem of using our collection resources where we could have the most effect. Using the READS system, we have been able to analyze characteristics of taxpayers which allows us to score collection cases by their probability of collection and estimated cost to collect. This ability to prioritize and assign cases has greatly increased
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our division’s productivity. I now receive tables and charts on collectability that give me a clear picture of our current receivables population.

We are currently developing the ability to score our collection procedures by analyzing billing records to see which types of communication had the most effect on collectability. Our improved understanding of the collection process and accounts receivable has enhanced our ability to serve the taxpaying public as well as to ensure that taxpayers are paying their fair share. I believe that overall compliance with the tax laws depends on the perceived fairness of our administration of the tax laws.

Lisa:
I am currently a manager in the Taxpayer Assistance and Compliance Department at KRC. Recently, we used READS to construct a list of taxpayers that would be eligible for and would significantly benefit from an economic development credit offered in the Commonwealth of Kentucky. We found, based on existing data for taxpayers currently using the credit, that corporations of a particular size and NAICS code have been beneficiaries of this type of credit in the past. We matched these characteristics against our corporate tax return data and found 147 more corporations that could benefit from this credit. We crafted correspondence and sent them each a letter describing this opportunity. We felt that it was our responsibility to educate taxpayers in order to ensure that the tax system is fair and efficient. The responses we got from these taxpayers were overwhelmingly supportive and we were able to assist them in getting to the right people at the Economic Development Cabinet for assistance, which pleased their Secretary and the Governor's office as well.

Rafael:
I am currently a manager in the Division of Research. A primary responsibility of Research is to analyze the impact of proposed legislation on the revenue stream and on the costs of administration. Policy-makers assume that because we have tax return data, we can answer these questions easily and with confidence. Since adding tax return data to READS, our ability to assist legislators and the Governor in policy-making has improved dramatically. For example, we were recently asked to assess, by income class, the incidence of a reduction in motor vehicle property taxes being considered by the General Assembly. In the past, we had to use U.S. data on consumption of automobiles by income class from the Bureau of Labor Statistics and apply an income, price, and family size factor to reflect the difference between Kentucky and the U.S. average. The process was time-consuming, and the results were highly conditional on our assumptions and on the methods of data collection. As such, we were not as confident of our response to the General Assembly as we would have liked, and we spent considerable time explaining the assumptions and pitfalls of the analysis.

Now, READS and the Master Taxpayer Index allow us to marry data on taxpayers’ income and assets. With the decision support tools, we were quickly able to generate tables and charts that showed the value of motor vehicle property taxes by income class in Kentucky. We were then able to apply the tax cut to show its incidence. We were also able to use demographic data to show the distribution of the tax cut by county of
residence and by family size. As a result of our analysis, the General Assembly was able to make more informed decisions about the size, equity, and efficiency of the proposed tax cut.

**Some specific benefits to the KRC**

The READS system will provide:

- A quick win for revenue enhancement by:
  - Reallocating resources to value added programs/functions;
  - Focusing collections and compliance efforts where they are most effective and efficient to support the KRC’s mission; and
  - Understanding taxpayer characteristics so that education and assistance can be tailored to meet specific needs.
- The ability to leverage existing information resources to evaluate KRC’s accounts receivable;
- The ability to determine KRC’s most valuable data and focus purification efforts on that data;
- Improved performance of accounts receivable through increased turnover rates and reduced write-offs for uncollectable debts; and
- Reduced costs by identifying sources of inefficient or marginally effective efforts, e.g. returned mail and associated direct labor, postage and handling costs.

**(D) Return on Investment, Short-Term/Long-Term Payback.**

The verdict on ROI for the READS Project is still out since the 1st Iteration was just deployed in March 2001. The initial infrastructure and development cost to deploy the 1st Iteration total $2.2 million. The anticipated cost for deploying the 2nd Iteration is approximately $1 million. Based on our projections, READS should provide approximately $10 to $12 million in additional revenue annually after deployment of the 2nd Iteration. Obviously the projected ROI is very favorable but it must also be offset by the annual operating cost estimated to be $600K.

The incremental benefits are expected to far exceed the ongoing costs of supporting the data warehouse. Future development iterations should extend the overall benefits of having a data warehouse by covering their incremental costs with additional benefits and improving the overall ROI factor.