Case Study: The State of Ohio Delivers Business Intelligence With a 'Think Global, Act Local' Organizational Model

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This case study examines the Ohio Administrative Knowledge System (OAKS) business intelligence (BI) program of the State of Ohio and, in particular, its focus on creating the right organizational model.

Key Findings

- The State of Ohio (see Note 1) created a multiagency BI Shared Council (BISC) to represent all agencies, boards, commissions and institutions of higher education. Participation in the program was voluntary. State agencies opted for a slightly more centralized approach to BI for their mutual benefit.

- The state delivered a new BI system that provides consistent statewide reporting from its core OAKS ERP applications. Reports validated by the BISC are available to all state agencies.

- Individual agencies are empowered to augment the central BI solution by extracting data from the core data warehouse, integrating it with their own agency data, and creating new reports using standardized BI capabilities.

- The OAKS BI project team, in conjunction with the BISC and central agency business owners, established audit processes and a set of automated controls to identify data quality issues with incoming data, blocking low-quality data from entering the warehouse.

Recommendations

- Consider using a "think global, act local" approach in your BI program to provide the right level of autonomy and agility to avoid the bottleneck problem that overly centralized BI teams create, while at the same time establishing enough consistency and standards for enterprisewide BI adoption.

- Reduce the amount of redundant data integration and report writing that is performed within the agencies with a centralized BI team.

- Use the BI presentation layer to shield agencies from upgrade "headaches" by isolating them from changes in the ERP source systems.

- Create a hybrid competency center structure built around a physical core project team, with a virtual team of managers and analysts from the agencies to establish standard state reporting requirements and improve data governance.

- "Think global" by creating a centralized data dictionary with functional definitions for each metric, while "acting local" by enabling agencies to build meaningful extensions to the state's data model and create custom calculations for new metrics not covered by the centralized solution.

- Implement a comprehensive organizational change management model with a robust training curriculum that includes hands-on courses that are available before and after "go live."

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WHAT YOU NEED TO KNOW

This case study describes how a state government was able to establish a BI program that thinks globally by delivering sanctioned statewide reporting derived from a central data warehouse and BI platform. At the same time, agencies, which are used to a high degree of autonomy in a federated environment, are empowered to act locally by doing a certain amount of data integration and report writing, but they are encouraged to use standard tools and data models. Every organization can use this case study as an example of how to achieve the right balance of centralized and decentralized BI governance, but it is most useful for public-sector organizations — particularly state governments.

While Gartner stresses the importance of balancing centralized governance with the need for decentralized autonomy, the bulk of this case study focuses on implementing the "think global" aspect of a think global, act local strategy, as the state agencies were already operating in a decentralized and autonomous manner. The State of Ohio did a good job of implementing more centralized control without swinging the pendulum too far, and therefore preserved the autonomy required by the traditional decentralized structure of state government agencies.

CASE STUDY

Introduction

In 2000, the state began an ERP initiative, which became known as the Ohio Administrative Knowledge System (OAKS), for performing the state's critical central business functions. The information provided by OAKS currently encompasses PeopleSoft Financials (FIN), Budget/Planning, Human Capital Management (HCM), Enterprise Learning Management (ELM), Customer Relationship Management (CRM) and Enterprise Performance Management (EPM). The deployment of this suite was completed in July 2008.

In 2006, the original BI solution was released. It was composed of the PeopleSoft EPM 8.9 environment with a Cognos reporting solution. However, the BI deployment was highly customized and was implemented inconsistently across various state agencies. As a result, the BI solution didn't meet the reporting and analysis requirements of the state. This case study describes the state's ongoing efforts to re-establish a new, agency-driven BI program that delivers intelligent reporting, trend analysis and proactive decision making.

The Challenge

The decentralized BI program that followed the initial OAKS rollout led to uncontrolled replication of data, lack of knowledge of available data, and a lack of understanding of which reporting tools to use when. The departmental approach to reporting provided only limited support for users. Reporting teams were scattered across EPM, FIN and HCM groups, making development inefficient, with a separation of data and reporting knowledge that made problem resolution inefficient and development difficult. For example, because the state system contains hundreds of fields and report writers weren't working as a team, there was no structure to dictate the use of standard fields when creating similar or related reports. As a result, users were slow to adopt BI. Moreover, many state agencies lost standard reporting (in the conversion to PeopleSoft) that was not replaced by the EPM implementation. All these issues led to a general feeling of dissatisfaction with the initial OAKS BI program. It was clear the state needed a new strategy to solve these problems.

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Approach

In December 2009, a new OAKS BI initiative was launched. The primary mission of the initiative was to create a central store of cross-departmental financial, employee and budget information that is easily accessible, consistent with the PeopleSoft ERP data, and supports a wide variety of reporting needs across the state. The centralized OAKS BI initiative was also established to support agencies in creating more complex and customized reports using the central architecture to meet agency-specific requirements. Therefore, the think global, act local concept was a guiding principle of the OAKS BI initiative.

Business Intelligence Team

The OAKS BI initiative included a BI Shared Council (BISC) to help ensure program continuity and to deliver meaningful content across all state agencies. The BISC has 54 members from 17 agencies composed of agency representatives, analytical subject matter experts and technical resources. Creating a physically instantiated team would be virtually impossible and ineffective given the decentralized culture of state government. Realistically, the best approach for the BISC was to build around a physical core of IT skills and agency business skills, and then to surround that physical core with a virtual team that possesses additional agency business knowledge and analytical skills.

To streamline communications throughout such a large and virtual team, a SharePoint site was created to provide a self-service and collaborative information resource for upcoming meetings, project presentation materials, recorded webinars and frequently asked questions. The first task of the BISC was to create a common metadata dictionary; the second task was to create a structure of data stewardship. The ongoing task of the BISC is to prioritize and establish the analytical reporting requirements across the enterprise.

Realizing that overly centralized BI initiatives can create a bottleneck that prevents agencies from getting their BI requirements met, the BISC empowers agencies to augment BI solutions, but while using the central architecture. Many of the larger agencies not only have their own IT capabilities and have written their own Cognos reports using OAKS data, but have also integrated OAKS data feeds into their reporting environment. Agencies have the ability to create a Cognos administrator role. The person or people filling this role is/are the only one(s) with write access to the agency production folder. This helps ensure that reports in the agency production folders work and meet agency needs. Furthermore, an agency can make other agencies aware that the new report exists, in case other agencies want to leverage it.

Data Governance

The purpose of data governance is to define a process that facilitates administering policies and procedures to deal with data challenges and issues related to data.

The plan for data governance encompasses creating trusted data. This is a multipronged approach, with the first steps being vetting the new data model and providing the metrics and dimensional model that will provide the building blocks for trusted data.

Other steps being taken to address the issue are:

- Establishing data quality policies.

- Creating metadata management practices.

- Arbitrating shared data questions.

- Establishing a common vocabulary to help users know they have the right data.

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- Maintaining OAKS-wide values for common reference data.

- Publishing data definitions in a data dictionary available to all agencies and users of EPM.

To ensure the consistency and quality of OAKS data in support of agency reporting requirements, the OAKS EPM/BI environment (including the OAKS Cognos instance) is serving as the state's system of record. It is the primary and shared data repository for all reporting and analysis of OAKS-related data. When agency reporting requirements involve both OAKS data and agency data in the same report, agencies can use their own BI reporting tool to build the reports, as long as it integrated with the OAKS data model. OAKS-only data should be reported from an OAKS Cognos instance. Agencies should not recreate their own versions of standard reports maintained by OAKS. Data originated by the OAKS transaction applications and persisted in the OAKS EPM environment should not be propagated or stored elsewhere.

The OAKS BI team embedded controls in the data flow. The intention was to check the control totals of an extraction, transformation and loading (ETL) job to ensure all the records extracted from a source reach the data warehouse, or data warehouse operational personnel conduct periodic audits to compare detailed data in the data warehouse with original sources to ensure nothing is omitted.

Business Intelligence Platform

The new BI system uses Cognos 8.4.1 working in conjunction with EPM (data warehouse) version 9.0. Through the use of multiple filtering options, the software will allow agencies to access commonly needed data without requiring them to recreate the reports in their own agency folder. Confusion across agencies about results returned will be greatly reduced by state agencies using the same consistent measures in the standard reports. Currently there are two Framework Manager Packages designed for each of the following subject areas: Finance (General Ledger and Travel and Expense) and HCM (Workforce Profile). These semantic layers enable users to easily find the following user-friendly aspects of their new reporting solution:

- Only fields of reporting value are included in the data warehouse, avoiding confusion about fields that may not contain any data, and improving performance.

- Fields are grouped together within dimension and fact tables, for quick accessibility.

- Field listings are ordered by relevance, and then listed alphabetically.

- Metrics are grouped together. You can quickly identify all the metrics that are available for that subject area.

- Improved speed, partly due to fast-performing look-ups of possible values (for example, instead of searching a flat table containing millions of rows for an employee, you search the Person dimension, which is limited to a single row for each state employee).
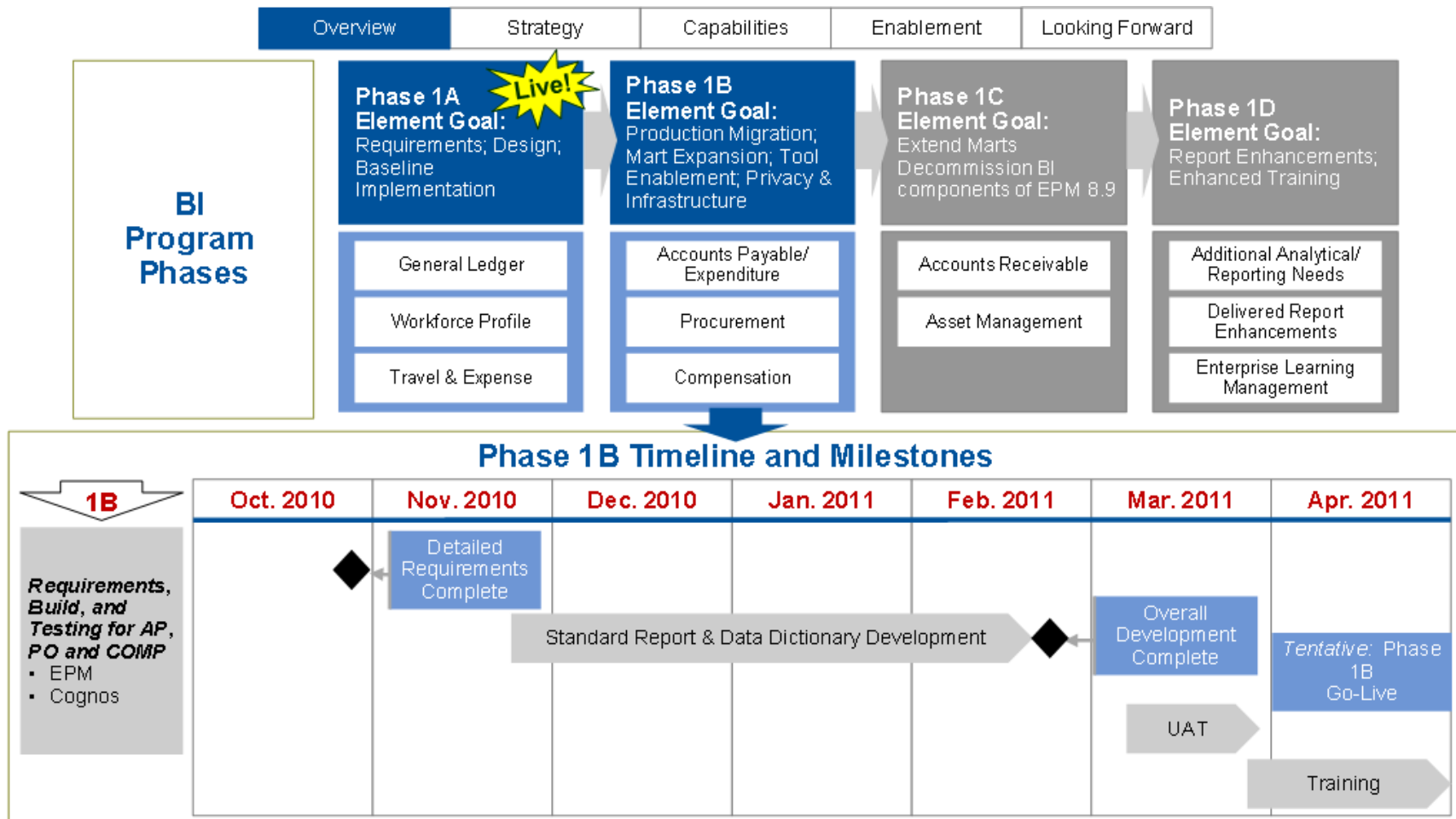
Results

Deployment

The state created a four-phase plan to implement OAKS BI (see Figure 1). The program was started in December 2009 with the objective of making OAKS data accessible and simple for its business users across all agencies. Phase 1A of the new OAKS BI system, which was completed in October 2010, offers a user-friendly tool for analyzing data. It will help employees throughout the state to effectively turn OAKS data into information that will support efficient decision making

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in the areas of General Ledger, Travel and Expense, and Workforce Profile. This first release (Phase 1A) includes 47 Workforce Profile, 11 Travel and Expense, and 54 General Ledger standard reports that have been validated by the BISC. In addition, through the logical presentation of the data model, it will also empower agencies to successfully augment this BI solution and the standard reports with custom reports to meet their individual needs. Phases 1B to 1D are in progress and will add the following subject areas: Accounts Payable, Accounts Receivable, Asset Management, Procurement, and Compensation.

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Figure 1. Overview of Ohio Administrative Knowledge System Business Intelligence Program

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AP = Accounts Payable
COMP = Compensation
BI = business intelligence
EPM = Enterprise Performance Management
PO = Purchasing
UAT = user acceptance testing

Source: State of Ohio — OAKS

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As the new OAKS BI initiative has only just got under way, most of the measurable benefits have yet to be realized. Nevertheless, the program has delivered 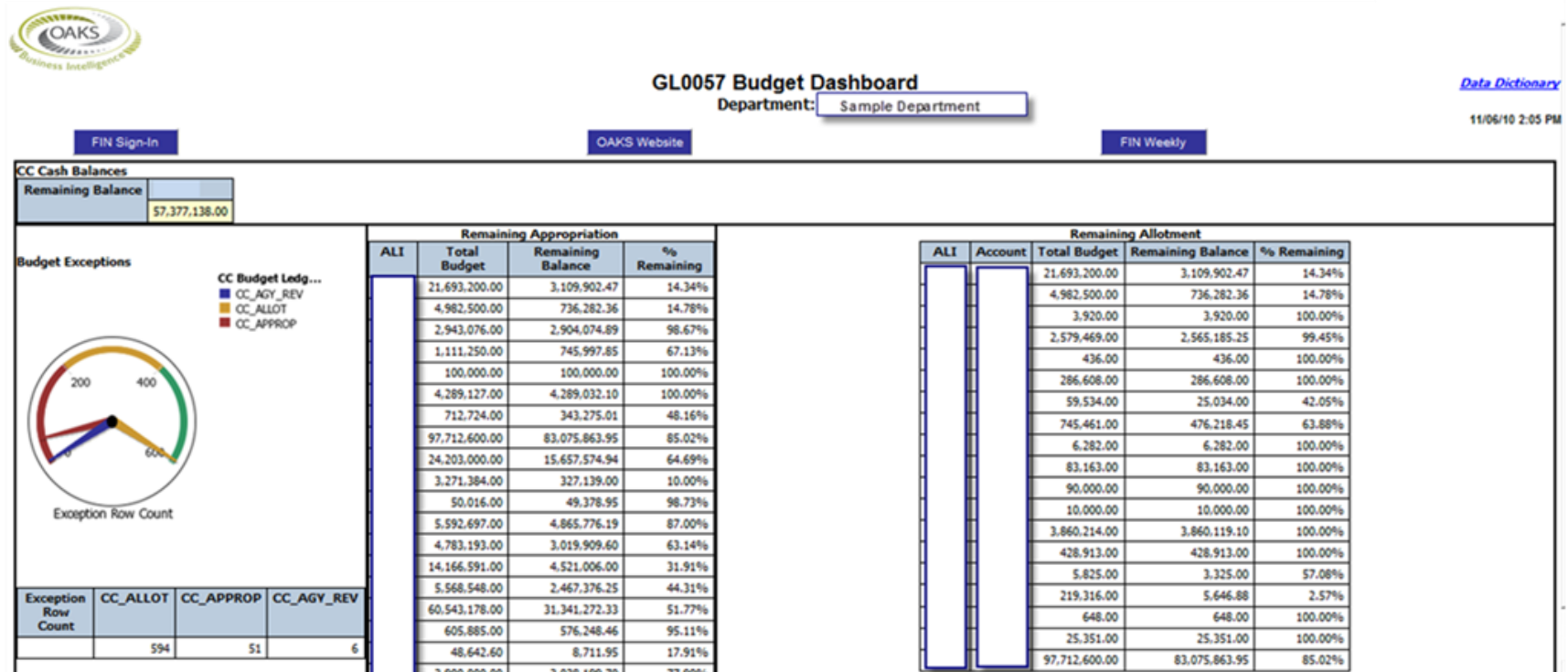some positive early results. First among them is the significant reduction in data integration and report creation work that previously was done redundantly within each agency. Deven Mehta, the deputy director, OAKS — BI, Infrastructure and Architecture Practice and OAKS BI program leader, said: "The OAKS Business Intelligence implementation will bring further savings for the State of Ohio through a reduction in potential redundancies, promotion of economies of scale and standard OAKS data warehousing and business intelligence solutions among agencies. The Ohio BI Shared Council and a robust agency enablement model have facilitated cross-agency strategy to ensure maximum efficiencies and cross-organizational effectiveness and have helped us deliver high-value focused business analytical applications, data marts and other meaningful extensions of a robust data model."

The second benefit is the empowerment of each agency to access consistent, high-quality data in a user-friendly manner, greatly facilitated by the creation of a data dictionary with more than 1,800 entries to improve user understanding of available reporting fields. What is most impressive about the creation of this centralized data architecture is that the state was very conscious of not losing the benefits of a decentralized architecture. Brandon Smith, assistant deputy director of the Human Resources Division within the Ohio Department of Administrative Services, said: "The project approach of 'think global, act local' has been a welcome paradigm shift in providing the best balance of governance and agility. By engaging our HR customers and our process/policy owners in the design process, the OAKS team was able to deliver a large number of standard reports that are endorsed by our central human resources agency while meeting the needs of HR professionals across the State of Ohio. Previously, each customer created and maintained their own reports and data, frequently resulting in different answers to the same question, depending on who created the report. We are now able to augment the business intelligence solution, as necessary, by leveraging the underlying architecture. This has increased end-user satisfaction, improved reporting accuracy, and allowed Ohio to move forward on the path of reducing redundant systems."

The OAKS BI program to date has delivered 112 new standard reports. And more than 96% of them can be run in 20 seconds or less, on average. Fifty-four of these reports are from the General Ledger subject area. These reports enable state workers to view general ledger and budgetary information, as well as to perform intuitive side-by-side comparisons of ledgers (see Figures 2 and 3).

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Figure 2. Report Showing Departmental Overview of State of Budget for Current Fiscal Year

GL0057 Budget Dashboard
Department: Sample Department

Data Dictionary
11/06/10 2:05 PM

FIN Sign-In   OAKS Website   FIN Weekly

CC Cash Balances

Remaining Balance	57,377,138.00

Budget Exceptions

CC Budget Ledg...
- CC_AGY_REV
- CC_ALLOT
- CC_APPROP

Exception Row Count

Exception Row Count	CC_ALLOT	CC_APPROP	CC_AGY_REV
	594	51	6

Remaining Appropriation

ALI	Total Budget	Remaining Balance	% Remaining
	21,693,200.00	3,109,902.47	14.34%
	4,982,500.00	736,282.36	14.78%
	2,943,076.00	2,904,074.89	98.67%
	1,111,250.00	745,997.85	67.13%
	100,000.00	100,000.00	100.00%
	4,289,127.00	4,289,032.10	100.00%
	712,724.00	343,275.01	48.16%
	97,712,600.00	83,075,863.95	85.02%
	24,203,000.00	15,657,574.94	64.69%
	3,271,384.00	327,139.00	10.00%
	50,016.00	49,378.95	98.73%
	5,592,697.00	4,865,776.19	87.00%
	4,783,193.00	3,019,909.60	63.14%
	14,166,591.00	4,521,006.00	31.91%
	5,568,548.00	2,467,376.25	44.31%
	60,543,178.00	31,341,272.33	51.77%
	605,885.00	576,248.46	95.11%
	48,642.60	8,711.95	17.91%
	3,900,000.00	3,038,199.70	77.90%

Remaining Allotment

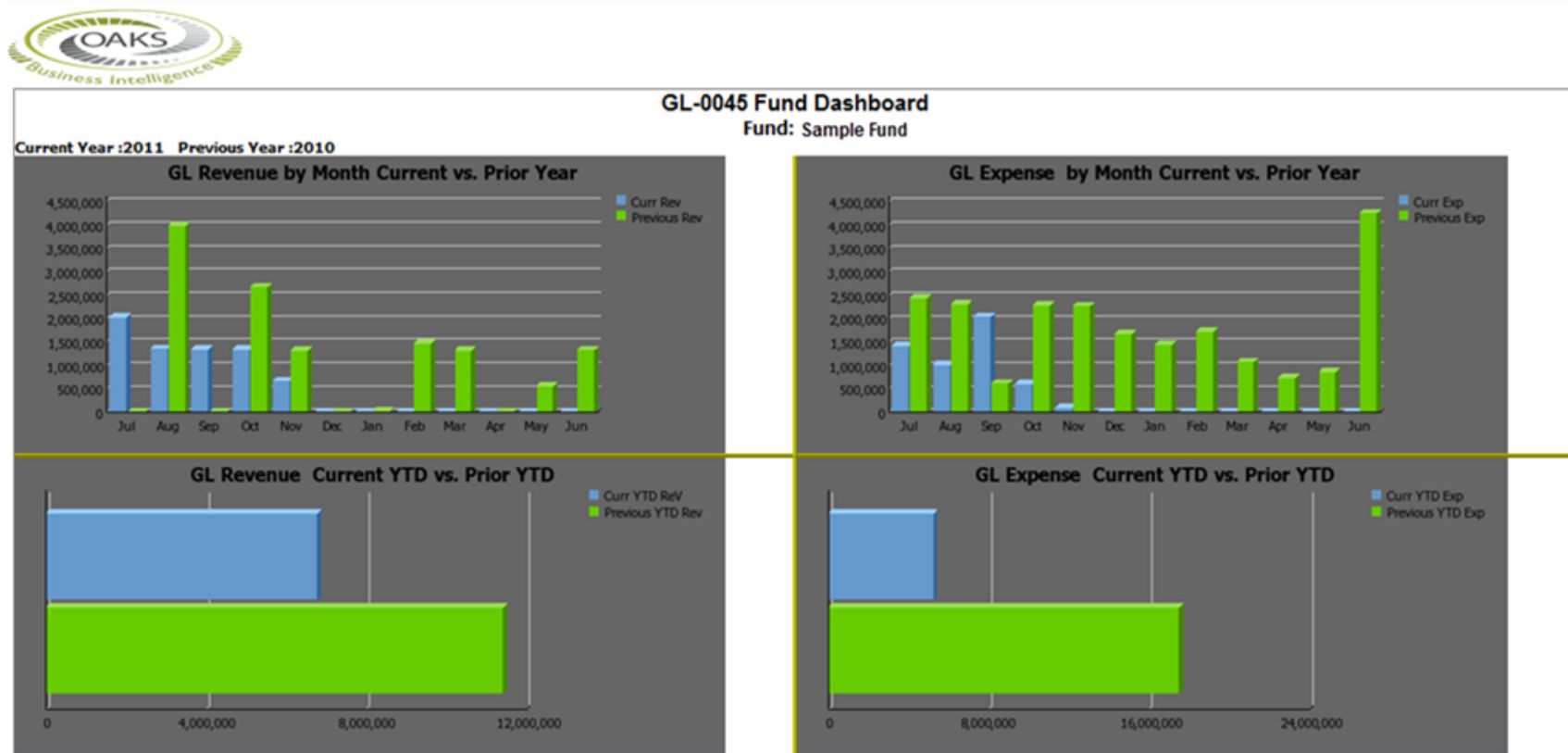| ALI	Account	Total Budget	Remaining Balance	% Remaining
		21,693,200.00	3,109,902.47	14.34%
		4,982,500.00	736,282.36	14.78%
		3,920.00	3,920.00	100.00%
		2,579,469.00	2,565,185.25	99.45%
		436.00	436.00	100.00%
		286,608.00	286,608.00	100.00%
		59,534.00	25,034.00	42.05%
		745,461.00	476,218.45	63.88%
		6,282.00	6,282.00	100.00%
		83,163.00	83,163.00	100.00%
		90,000.00	90,000.00	100.00%
		10,000.00	10,000.00	100.00%
		3,860,214.00	3,860,119.10	100.00%
		428,913.00	428,913.00	100.00%
		5,825.00	3,325.00	57.08%
		219,316.00	5,646.88	2.57%
		648.00	648.00	100.00%
		25,351.00	25,351.00	100.00%
		97,712,600.00	83,075,863.95	85.02%

ALI = appropriation line item
CC = commitment control
FIN = Finance
OAKS = Ohio Administrative Knowledge System

Source: State of Ohio — OAKS

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**Figure 3. Report Showing an Overview of Current Versus Prior Year Revenue and Expenses for Sample Fund**

Exp = expense
GL = General Ledger
OAKS = Ohio Administrative Knowledge System
Rev = revenue
YTD = year to date

Source: State of Ohio — OAKS

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In the Travel and Expense subject area, OAKS BI delivered 11 standard reports that now enable the reconciliation of Travel and Expense data to the General Ledger. In the Workforce subject area, 47 standard reports were created that now enable the ability to accurately report: hires and separations, open and filled positions, the employee/supervisor relationship, and outbound transfers (see Figure 4).

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Figure 4. Report Showing Breakdown of Head Count by a Variety of HR Attributes

OAKS = Ohio Administrative Knowledge System

Source: State of Ohio — OAKS

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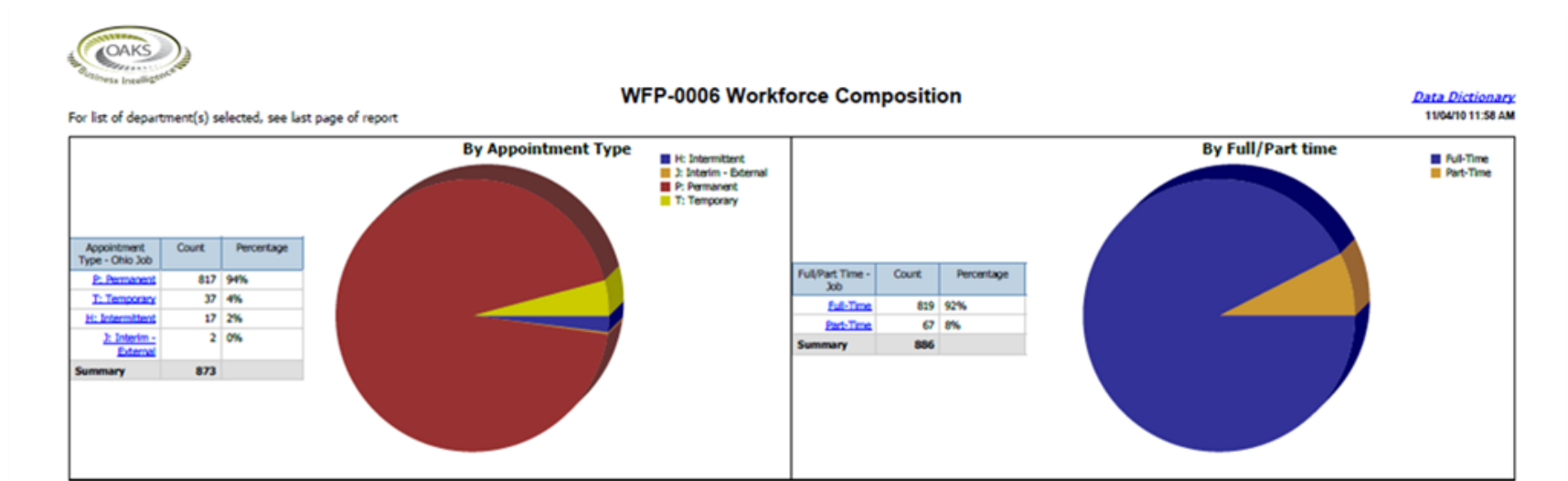
Critical Success Factors

- The think global, act local approach to the BI initiative was the key success factor.

- Trusting the data is paramount to the success of a BI solution. With more than 180 tables audited to ensure data consistency between the source and the data warehouse, data governance was a key success factor.

- When the new OAKS BI initiative was started, a documented BI strategy was created that helped align and motivate the various agencies to work collaboratively.

- Focus on agency enablement, training and organizational change management. Virtually all the 735 unique users across 160 agencies, boards and commissions across the state were trained in the new BI OAKS initiative between August and October 2010.

Lessons Learned

Users find tremendous value in interactive reports. Although they like the flexibility of creating their own ad hoc reports, the large majority of users find their needs met completely by standard reports. This means the majority of users do not need to understand the model and how to create reports/queries. They have their needs met simply by responding to flexible prompts. This reduces training costs and helps users operate within their comfort zone (analyzing data rather than being a report developer).

Prior to starting the initiative, the State of Ohio IT department worked collaboratively with the agencies to create a comprehensive BI strategy. An agency-driven framework that defines the people, processes and technologies that need to be integrated and aligned has been adopted to take on a more strategic approach to solving the BI and analytics challenges of the state.

BI implementation is a critical, complex initiative and needs to be driven by the agencies — OAKS is facilitating the effort, to drive a successful solution. Focus on incremental delivery with various gating points with the executive and governance bodies to minimize the risk. Ensure alignment with the central agency business process owners, decentralized agencies CFOs, HR administrators, CIOs and core user base, infrastructure and network division, operations, FIN and HCM source system subject matter experts, implementation and various specialized staff augmentation and product vendors.

RECOMMENDED READING

"Deliver Business Intelligence With a 'Think Global Act Local' Organizational Model"

Note 1
Acknowledgment

We would like to acknowledge Deven Mehta at the State of Ohio for his contribution in developing this Case Study.

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