



# Administrative Data Management

**Annual Report  
FY2008-09**

## Executive Summary

Administrative Data Management (ADM) is placed in a unique strategic position to examine, model, report and analyze Business, Finance, and Human Resource information. Today we see similarities at universities across the country taking a proactive role in managing their business by incorporating best practices for data warehousing and business intelligence. Through the collection of data from numerous sources ADM is able to provide benchmarked indicators relevant to the University's success and present organized information that is readily available to plan, predict and solve problems in new ways that facilitate better business decision making.

Significant accomplishments of ADM during FY09 encompass data access, chart of accounts reengineering and dimensional analysis. Through the collaborative efforts of ADM and Data Custodians a rich set of reports are available to the campus, requiring less time to collect and assemble information. In addition, ADM played a vital role in supplying data to various federal and state regulatory agencies and external auditors.

Looking ahead, we expect the economy to be challenging throughout FY10; therefore, ADM is committed to deliver information that will benefit the University in making timely, thoughtful and informed decisions. The ADM team plans to introduce an impressive range of reports that support strategic budgeting and resource allocation, and to implement enhanced delivery mechanisms to distribute regularly used reports to constituents via e-mail.



# Table of Contents

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## Overview

Overview.....	1
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## Responsibilities

Support Areas.....	1
Data Modeling.....	2-3
Data Warehousing.....	3-4
Reporting.....	4-5
Security.....	5-6
Data Integrity.....	6
Performance.....	6

## Accomplishments

Campus Community Reporting Portal.....	6
Chart of Accounts Reengineering.....	7
Year-End Financial Reporting.....	7
Dimensional Analysis and Decision Support.....	7-8
Operational.....	8

## Training

End User Training.....	9
ADM.....	9

## Service

Customer Interface.....	9
Specification.....	9
Timeliness.....	9
Quality.....	9-10
Prioritization.....	10

## Service Center

Cost/Benefit.....	10-11
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## Future Direction

Information Access and Standards.....	11
Strategic Planning and Budgeting.....	11

# Figures and Appendices Listing

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## Figures

**Figure 1.1** – Resource Distribution

**Figure 2.1** – Support Areas

**Figure 3.1** – Relational Data Modeling

**Figure 3.2** – Data Model Packages

**Figure 3.3** – Dimensional Data Modeling

**Figure 4.1** – Central Reports by System

**Figure 4.2** – Campus Reports by System

**Figure 4.3** – Ad-Hoc Query Models (Packages and Cubes)

**Figure 5.1** – Average Report Execution Time (In Seconds)

## Appendices

**Appendix A** – Relational Data Models

**Appendix B** – Data Model Packaging Documentation

**Appendix C** – Cube Documentation

- C-1: CU-Department
- C-2: CU-Employee
- C-3: CU-Employee with Benefit Data
- C-4: CU-Fiscal Watch
- C-5: CU-Fiscal Watch Multi-Year
- C-6: CU-Fiscal Watch FY08 Yr End
- C-7: CU-Fiscal Watch FY09 Yr End
- C-8: CU-HED SCH
- C-9: CU-HED Instruction
- C-10: CU-HED Instruction Student Campus
- C-11: CU-Position Data

**Appendix D** – Operational Data

**Appendix E** – Longitudinal Data

**Appendix F** – Appworx Modules

**Appendix G** – Ad-Hoc Query Package Documentation

- G-1: PK-HR-CURR-EMPLOYEE-DATA-PODS
- G-2: PK-HR-CURR-POSITION-DATA-PODS

**Appendix H** – Cognos Security

- H-1: “Request for NMSU Cognos Production (Cognos-P) Reporting Portal Access”
- H-2: ADM Security Procedure – University Roles, Cognos Security and Security Class Definitions

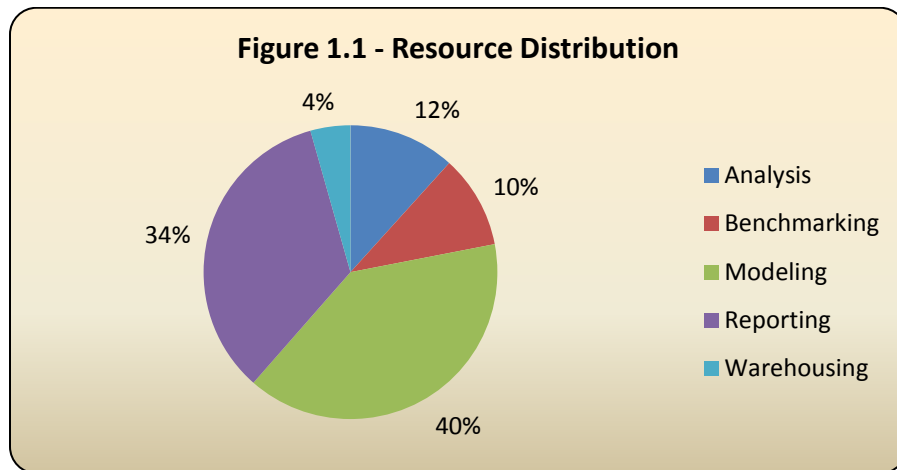
**Appendix I** – Health Scripts

**Appendix J** – List of Database Indices

**Appendix K** – Budget/Job FOAPAL Labor Distribution Comparison Package Documentation

## Overview

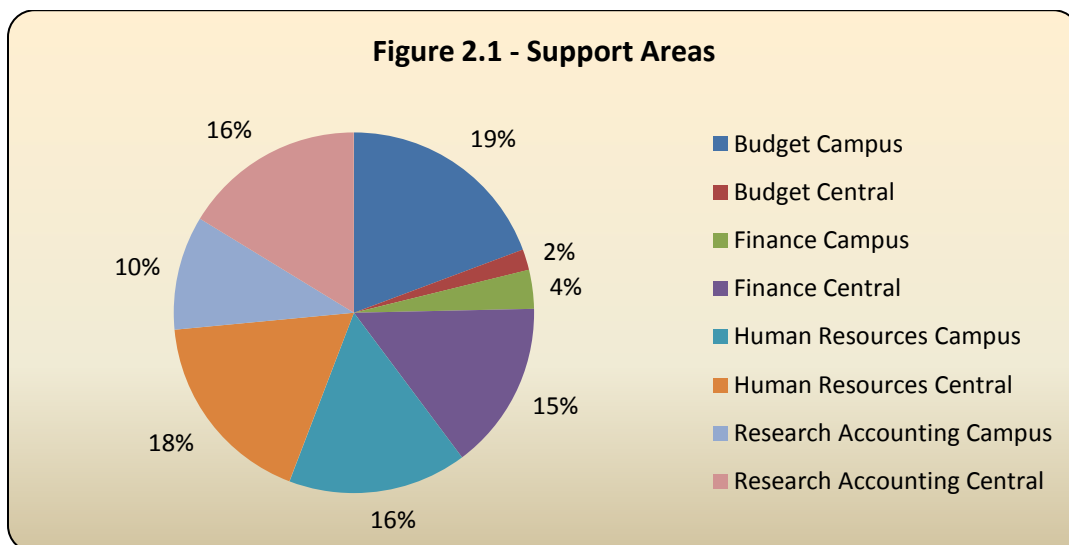
Administrative Data Management (ADM) leads the business intelligence strategy of New Mexico State University by creating a diverse set of relational, hierarchical and forecasting data models; warehousing key higher education data elements; delivering a rich report set to central and distributed consumers; benchmarking key performance indicators; and providing numerous analyses in support of the university's mission.



## Responsibilities

### Support Areas

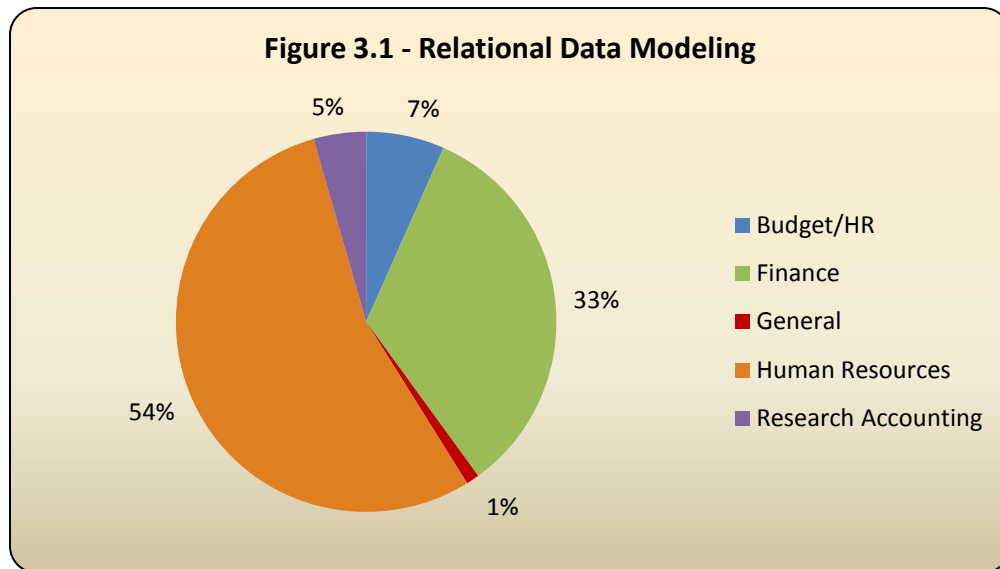
ADM supports the central and distributed reporting needs of the Senior Vice President for Business, Finance and Human Resources, consisting of the following NMSU data custodian offices: the Budget Office, the Controller's Office, the Sponsored Projects Accounting Department and Human Resource Services. The relative distribution by support area is shown in Figure 2.1.



## Data Modeling

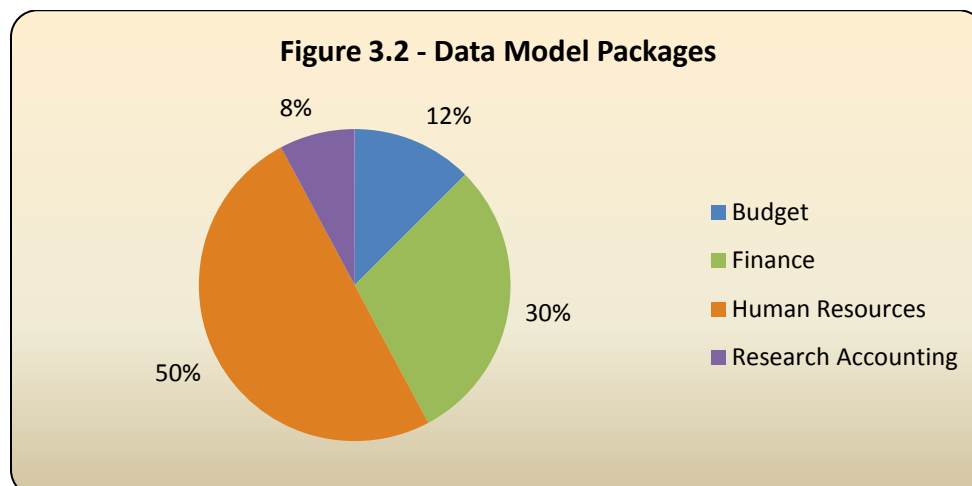
### Relational Data Modeling

ADM is responsible for all budgetary, financial, sponsored research and human resources relational data modeling. Relational data modeling consists of the programmatic linking of related information into reporting views. In addition to collecting numerous fields of information into one logical reporting unit, these views encapsulate business rule logic into standard fields to ensure consistent usage across multiple reports. Views also provide a specific query execution path, thereby greatly enhancing report performance. A summary of production-level relational data models supported by ADM is detailed in Figure 3.1. Relational data models are provided in Appendix A.



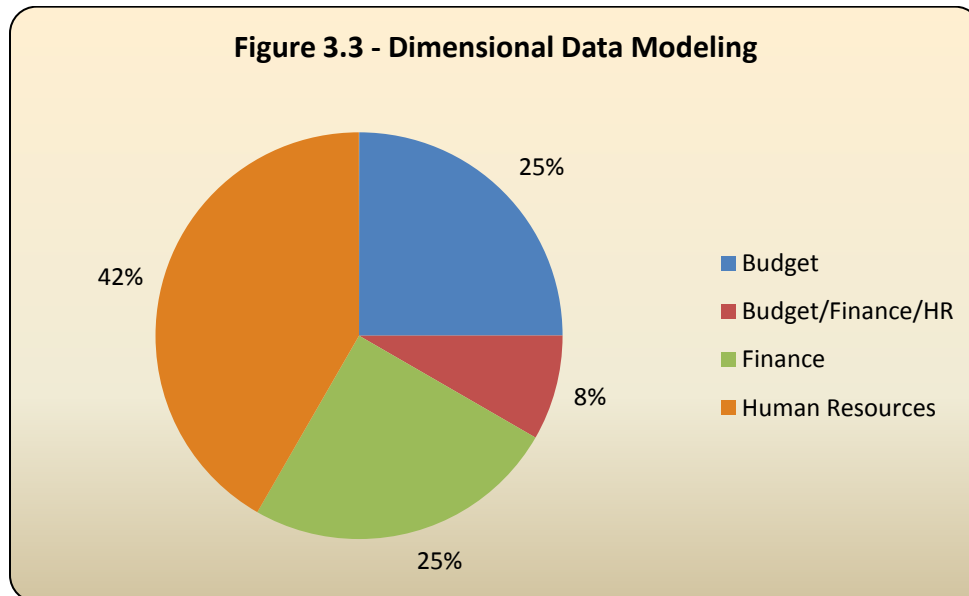
### Data Model Packaging

ADM creates and administers budgetary, financial, sponsored research and human resources data model packages, collections of linked database tables and views (relational data models). In addition to acting as an information collector, packages provide the ability to secure information by class. A summary of production-level data model packages supported by ADM can be seen in Figure 3.2. In addition, package documentation is detailed in Appendix B.



### Dimensional Data Modeling

ADM is responsible for the creation of budgetary, financial, sponsored research and human resources multi-dimensional data models (cubes). Cubes provide the ability to analyze numerous measures (e.g. employee FTE, research expense, cost per unit) across a number of dimensions (e.g. organizational unit, demographic attribute, academic level, etc). A summary of production-level dimensional data models supported by ADM is shown below in Figure 3.3. Cube documentation can be seen in Appendix C.



### Data Warehousing

ADM is responsible for the warehousing of budgetary, financial, sponsored research and human resources data. All data is stored in the shared university data warehouse. The warehouse thus supports the efforts of multiple centralized and distributed staff members and researchers.

### Operational data

ADM captures both relational and dimensional data model information on a daily basis to provide operational reporting with enhanced performance. This supports, for example, the need for fiscal administrators to monitor transactions on a daily basis or as needed. A detailed listing of this information is provided in Appendix D.

### Longitudinal data

ADM captures relational and dimensional data model information at specific points in time to support longitudinal analysis, trending and forecasting. This supports year-over-year comparisons and the ability to forecast expected future outcomes. Appendix E shows a comprehensive listing of this information.

### Benchmarks

ADM is responsible for harvesting data from a number of external sources in order to create measures that provide a point of comparison for NMSU's key information. Data sources currently supported are the Integrated Postsecondary Educational Data System (IPEDS), Delaware Study of Instructional Costs and Productivity, Association of Physical Plant Administrators of Universities and Colleges (APPA) and Educause.

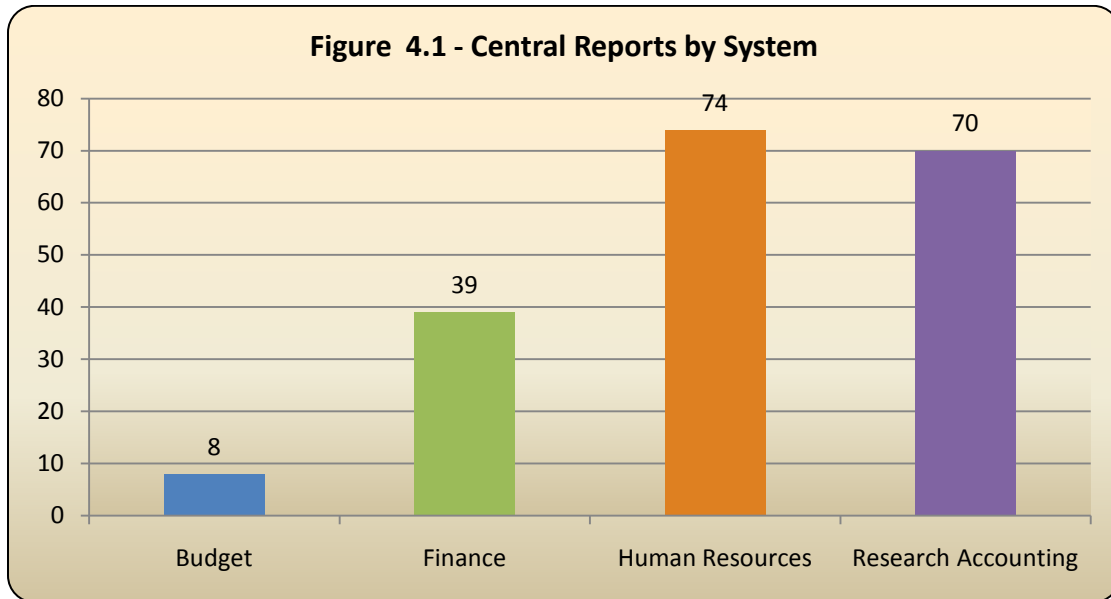
### Nightly Scheduling

ADM oversees the scheduling of nightly, bi-monthly, monthly, and annual creation processes for budgetary, financial, sponsored research and human resources data which enforce the orderly integration of modeling tasks. A detail of Appworx modules is located in Appendix F.

### Reporting

#### Central administrative reporting

ADM has developed a comprehensive set of production-level reports supporting the university's daily operations. A summary of central reports is shown in Figure 4.1.

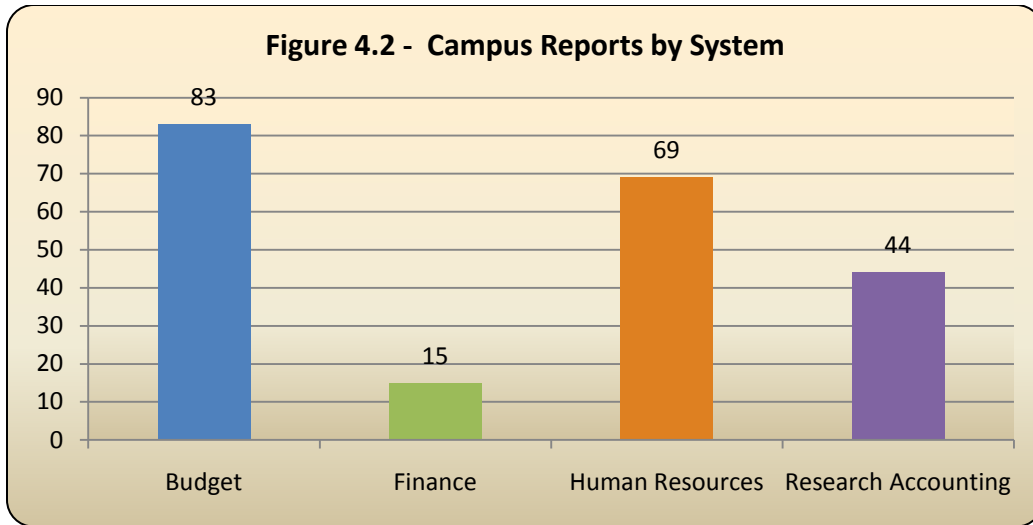


#### Regulatory/Survey

A number of regulatory reports for various state and federal bodies are provided by ADM, e.g. Occupational Safety and Health Administration (OSHA). In addition to reports specifically created by ADM, many other reports are substantially supported via data models created by ADM, e.g. the federal IPEDS report and the American Association of University Professors (AAUP) survey. ADM also provides information for accreditation and research proposals.

#### Campus community

The NMSU campus community is supported in its need for budgetary, financial, sponsored research and human resources information by reports both in list format and summarized at appropriate administrative levels. A summary of campus community reports is shown in Figure 4.2.

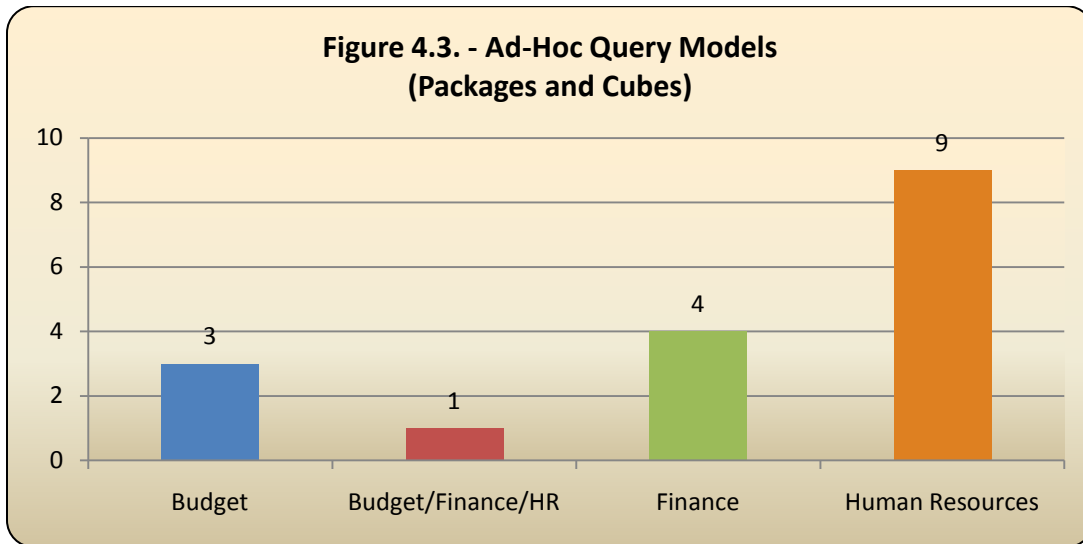


**Executive**

ADM supports data-driven decision making by providing performance measurement tools to the executive administration. A number of analyses have been completed, including cross-campus course consumption.

**Ad-hoc query**

ADM provides data models to support the university community’s immediate ad-hoc query requirements. A summary of information available for user query is illustrated in Figure 4.3. Package documentation is included in Appendix G.



**Security**

ADM is responsible for administering budgetary, financial, sponsored research and human resources reporting security utilizing security policy and procedures specified by the University Executive Cabinet and the office of the Senior Vice President for Business, Finance and Human Resources. The “Request for NMSU Cognos Production (Cognos-P) Reporting Portal Access” and ADM’s security procedure is

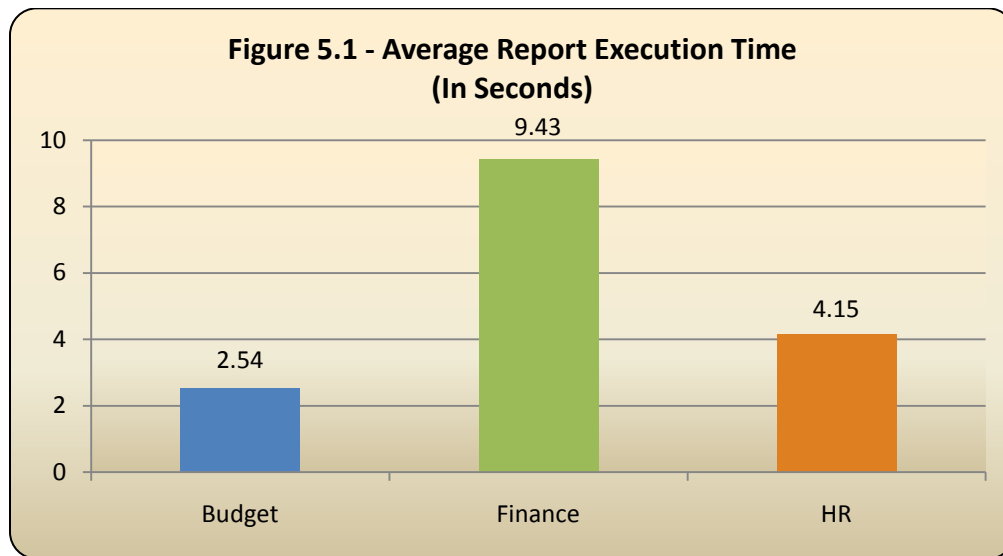
located in Appendix H. The responsibility for administering Cognos security will be transferred to Information and Communication Technologies (ICT) on approximately January 1, 2010.

### **Data Integrity**

ADM initially developed and now oversees a variety of data health scripts to ensure the integrity of operational information (Appendix I).

### **Performance**

Data warehousing extract, transform, and load (ETL) technology provides the foundation for end-user interface requirements and experience to ensure minimal response time for report display, analysis, and download. The use of database indices is incorporated in every data model to aid in this process. The average report execution time is found in Figure 5.1. A list of database indices is located in Appendix J.



## **Accomplishments**

### **Campus community reporting portal**

#### **Portal access**

Acting on end-user feedback, ADM embarked upon a project to ease the burden on users by providing sets of reports specifically created for the user's role on campus, e.g. a department head. A department head likely requires a set of information on a regular basis to perform the functions of the position (e.g. an instructional summary, an employee summary, a budget summary and a research summary). Several data models were created to support this functionality. These data models determine the user's organization in order to filter information most relevant to the individual.

#### **Portal content**

ADM consulted with the responsible data custodians and user focus groups to define a comprehensive set of reports relevant to end-users. The BFHR data custodians provided report validation.

## **Chart of accounts reengineering**

ADM contributed to the chart of accounts (COA) reengineering project. The fund reengineering sub-project and applied charges sub-project required the incorporation of COA hierarchy changes in several data models and reports. Although the projects required significant man-hours of effort, the result of the reengineering is a more meaningful set of information for end-users.

## **Year-end financial reporting**

ADM enhanced financial reporting by providing data models to support and reconcile information for the year-end Statement of Net Assets (SNA), Statement of Revenues, Expenses and Change in Net Assets (SRECNA) and the state Budget Exhibits.

These data models and reports provide both summary and detail information and the ability drill into the specific funds, organizations, accounts, programs, activities and locations which comprise a statement line item.

## **Dimensional analysis and decision support**

### **Financial**

#### ***Fiscal Watch***

ADM developed a production-level multi-dimensional data model encapsulating multiple fiscal years of information. This enabled the analysis of budget, revenue and expenditures over multiple fiscal years: 1) full year-end information supporting financial year-end reporting, pattern analysis, and strategic planning; and 2) current month year-over-year comparisons supporting the fiscal monitoring of organizations, funds, program and accounts. ADM received support from the Budget Office and the Controller's Office in validating the data model.

### **Human Resources**

#### ***Employees, Employee Positions, HR IPEDS Multi-Year***

ADM provided several multi-dimensional data models for human resources. In consultation with the Human Resource Services Office, the Budget Office and the office of Institutional Research, Planning and Outcomes Assessment, ADM is finalizing a production-level HR year-over-year multi-dimensional data model supporting governmental and survey reporting (IPEDS, HED, AAUP, etc). In addition, this cube supports the university's ability to analyze patterns in personnel expenditures and forecast the consequences of employee benefit changes.

### **Research**

ADM created a multi-dimensional data model summarizing grant budgets and expenditures over the life of the grant as well as forecasting and encumbering personnel expenditures through the remaining grant term. ADM has been assisted by the Sponsored Projects Accounting department and college representatives in the categorization of expense and validation of information and providing the perspective of the principal investigator, the department head and the dean in terms of monitoring expenditures and in analyzing research patterns and productivity. This data model is due for production deployment in Fall 2009.

## **Budget**

### ***Labor Distribution***

ADM developed a labor distribution data model to examine the budgeted and actual labor distribution of the workforce to support budgetary planning and analysis and grant effort reporting. The model merges Budget, Finance and Human Resource data allowing end-users to reconcile across system modules. The model supports several reports and business functions, such as where salary savings are being generated, monitoring of vacant positions and labor forecasting efforts (see Appendix K).

### ***HED Instruction***

ADM developed a multi-dimensional and instruction data model summarizing the instructional budgetary component, including dimensions for instructor, course content, course modality, delivery times and mechanisms, offering campus, and formula dollars. This model contains information from the budget, HR and student realms and supports the analysis of student instructional consumption. This model is planned for production deployment in the fall of 2009. This model is an enhancement to the instructional formula data model, *HED SCH*.

### ***Faculty Workload***

ADM is piloting a faculty workload data model summarizing the instructional and research workload of faculty by labor expense, instructor type, course modality, etc. This model contains information from the budget, research, finance, HR and student realms and supports the analysis of faculty workload and compensation. This data model supports the university's strategic planning initiatives.

## **Executive**

ADM provided analyses supporting NMSU's examination of multi-campus enrollment management, enrollment forecasting and employee benefit forecasting and negotiation.

## **Strategic Planning**

### ***IPEDS Benchmark, Delaware Benchmark, APPA Benchmark***

ADM created multi-dimensional data models that provided a comparison of key institutional performance indicators to NMSU peer institutions and Carnegie Research-Extensive institutions. The data models support the university's strategic planning efforts under the auspices of the Living the Vision (LTV) committee. The LTV's data subcommittee is currently considering and reviewing relevant benchmarks and indicators. ADM acts as a facilitator of the LTV data subcommittee. In addition, ADM developed a multi-dimensional data model supporting benchmarking at the discipline, department, college and campus levels for instruction, research and public service. A facilities data model supporting benchmarking of the university's operation and maintenance of plant activities and expenses was also developed.

## **Operational**

ADM supported a number of projects in support of enhanced data warehousing and business intelligence capabilities, including:

- Development and implementation of system interfaces
  - Newhire, TIAA-CREF, Valic, VSP, etc
- ODS 8 Upgrade
- Cognos Upgrade

## **Training**

### **End user training**

The Human Resources Services' Center for Learning and Professional Development has compiled a Cognos training curriculum and supports training sessions for end-users. ADM contributed to the course content.

### **ADM**

ADM utilized Cognos training to enrich the business intelligence capabilities of staff members. These training opportunities are increasingly provided via distance delivery mechanisms.

## **Service**

### **Customer interface**

ADM recognizes the strategic importance of interfacing with representatives from Human Resources, Finance, ICT and various academic departments to identify and prioritize reporting needs. Through the process of regular monthly meetings, ADM is able to collect information that will be used to develop data models for the future reporting needs of NMSU. To further develop customer service delivery, ADM has taken advantage of NMSU sponsored trainings, such as Customer Service Starts and Ends with You.

In addition, complex data models and reports may require supplemental work sessions. The working session provides an opportunity for departments and ADM to develop and define business rules that have not been established and will be used for future reporting. In certain cases, redefined business rules will trigger modification of existing reports at the client's request.

### **Specification**

A report specification form is completed by the requesting department. The form captures information related to the report design and defines the criteria for data selection. By collecting specifications upfront, questions/inquiries between report developers and clients are minimized. This in turn allows report developers to focus on the technical aspects of report creation. The completed form is also used by data custodians to assist them in the report validation and sign-off process.

### **Timeliness**

Average turnaround time for new report requests range between 1-3 weeks. Modifications to existing reports are returned for client testing and validation in 3-5 days.

### **Quality**

The need for business information to be clean and error free is of utmost concern for users of data. ADM acknowledges this concern and applies best practices with standardized source data fields and ensuring consistency of information.

ADM's staff performs an internal validation of data at different levels to ensure accuracy prior to departmental release, at which time departments will further validate reports prior to a production

deployment. Some practices employed by ADM are: match records across or within data sources, providing assurance that duplicate data is removed and allowing common entities from different sources to be identified and linked together, thereby creating foreign key relationships where there were none. As a regular task, ADM applies these practices to all types of business entities including human resources, purchasing, finance, student credit hours (SCH) and chart of accounts. These practices are vital to ensuring high quality information and ensuring that systems have a comprehensive view of information.

### **Prioritization**

On a day-to-day basis, ADM uses the “first-in, first-out” concept to prioritize reports. Naturally, through regular monthly meetings, ADM’s customers are able to shift reporting priorities as necessary which will allow them to benefit from available resources.

## **Service Center**

The campus community is becoming increasingly aware of the multitude of reports and data models ADM is prepared to deliver. Reports and data models range from finance, human resources, SCH, IPEDS and peer institution comparisons and has positioned ADM to provide improved information dissemination and access.

### **Cost/Benefit**

Examples of where NMSU has recognized both direct and indirect benefits are:

#### **Time Savings**

- Less time spent by ADM personnel downloading data for users
- Less time spent by ADM personnel writing queries for users
- Less time spent locating data
- Less time spent by analysts responding to requests for information

#### **More and better information**

- Having information that did not previously exist
- Users' ability to analyze data in new ways
- Ability to think of doing business in new ways

#### **Personnel Savings**

- Resource Allocation: The creation of ADM has empowered departments to effectively use and manage human resources. What previously took days for university staff to compile information from multiple data sources or manually keying in data into spread sheets can now be accomplished within a few seconds. This will allow redeployment of operational personnel to higher-value producing activities.

#### **Improved Decision Making**

- Decisions based on facts rather than intuition
- Faster decision making

- Ability to analyze alternatives better
- Ability to identify and act on problems better

#### **Support for Strategic Business Objectives**

- Faster response to changing economic conditions

## **Future Direction**

### **Information Access and Standards**

In FY2010 ADM plans to provide enhanced service to clients by implementing and supporting multiple report delivery mechanisms, including the bursting of reports by email to department heads, principle investigators, fiscal monitors, etc. This will decrease the burden on campus administrators and executives by offering information in both a distribute-out (push) and query-in (pull) fashion and increasing operating efficiency. In addition, ADM will explore additional output styles including both graphical and formatting opportunities to convey information and draw attention to information requiring action. Finally, ADM will employ opportunities to prompt report delivery based on events, once again assisting users with actionable items.

ADM plans to assist information consumers by taking a lead role in creating a report inventory, data dictionary and business rule summary. This collection will be achieved via collaboration with BFHR data custodians.

### **Strategic Planning and Budgeting**

ADM will expand upon its benchmarking and analytics by providing strategic budgeting models and dashboard style metrics supporting the University's strategic planning efforts.

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