Information Access and Decision Support Strategy
For a Data Warehouse and Distributed Reporting Solution

I. Introduction

In 2004 Washburn University completed a multi-year implementation of the SunGard Banner enterprise-wide information system. This software and its relational database support the University’s admissions, student records, financial aid, student accounts, financial, human resources, and a wide range of academic and administrative services and operations. Banner is an online transaction processing system that provides data entry and management capabilities and processing functionality. Numerous screens allow secure access to online data for University departments and offices. MyWashburn (through the Luminis portal product) allows faculty, staff, and students to access a variety of targeted web-based, self-service features, e.g., class lists, registration, billing information, and online purchasing. Banner and MyWashburn are jointly used by Washburn University and Washburn Institute of Technology, therefore, this document applies to both entities.

A number of “standard” reports were delivered with Banner or developed by Washburn during and after the implementation. Information Systems and Services (ISS) and Institutional Research (IR) have worked collaboratively to create reporting procedures and share in the creation of over 800 custom reports from data stored in Banner. These reports are largely operational reports used by functional units for internal information needs or data validation, for fulfilling campus requests, or for responding to external requests, e.g., accreditations, audits, State reporting. Ad hoc queries or reporting capabilities are available to only a few areas of the University and are usually completed with the assistance of ISS or IR. Current reporting tools now include Banner-delivered reports, self-service Banner, Crystal Live reports (800+) and Oracle Application Express reports (academic reports, employee directory, student directory, and mailing labels) available through MyWashburn. These reports use Banner as their data source.

Washburn’s use of Banner has expanded beyond the transaction-based and basic reporting stage. Accessing and producing information (not just data) has become increasingly important to University planning, decision making, and assessment activities. The University’s strategic plan, completed in 2010, emphasized the importance of useful, timely information. Expectations as to strategic value of information within the University include: “Accountability: being held responsible for academic, programmatic, and fiscal integrity and value while prudently managing the resources entrusted to the University”, and “Improve operational excellence and administrative efficiencies through greater use of technology, improved communications, and strategic use of data.” The Kaludis Consulting IT Assessment report (July 2010) concluded that “Washburn is “data rich and analysis poor” because the Banner database is growing, but getting useful data out is problematic. Therefore, attention should be given to review data definitions now that Banner has been used for several years. In addition, a data warehouse and reporting strategy should be developed and a reporting tool other than Crystal implemented.”

The academic deans, VPAA and VPAT offices, Washburn’s Executive Staff, and the Technology Steering Committee have all set a high priority on the development of a more responsive reporting solution for the University.
The University’s recently drafted IT Strategic Plan provides the best framework for the decision support and distributed reporting project. It includes the following objectives:

1. Provide distributed reporting and management reporting (reports that help managers make appropriate decisions) capability to end users.

2. Develop, acquire, or effectively utilize applications for extracting data from Banner and other institutional systems (e.g., iCard, electronic lock system, ACEware) easily and securely.

3. Review, analyze, determine, and publish core data element definitions.

4. Utilize existing data entry standards (and develop additional standards as needed) and review/develop a process for cleansing the data.

5. Provide and regularly review appropriate access to data for units/staff by job function.

II. Reporting Strategy

This document and its recommendations are the result of the interrelated work of several Washburn groups, including individuals from most of the Executive Staff areas. However, it is useful to understand where Washburn is and where it should to be for a successful reporting solution. This diagram illustrates that Washburn is at level 2 in this multi-stage reporting model. Through the strategy outlined in this document, Washburn will move to Level 3.

Two terms that will be used in this document: datamart and data warehouse. For the purposes of Washburn’s reporting strategy these terms are defined as: A datamart is a collection of data elements related to a particular area such as admissions, budget, or student/course enrollment. A datamart is usually a daily snapshot of portions of the live Banner database. A data warehouse is the collection of multiple datamarts so that reports can be created by seamlessly accessing data from multiple datamarts. Some of these datamarts may be “frozen” in that they reflect the data state at end-of-month, mid-semester, end-of-year, etc. This allows comparative or trend analysis.
In addition, it is important to understand that distributed reporting is a core component of this plan. This term means that College units and their personnel can independently create and execute their own reports or run reports from a core library. There is some distributed reporting within Washburn, but most reports are created by IR or ISS. This model is not scalable because the increasing demand for reports exceeds the availability of staff support in IR or ISS. This situation has led to duplicative desktop databases being created to meet reporting requirements; this means redundant data entry/maintenance, independent and possible inconsistent data, and data that cannot be readily shared in a secure and useful manner. Therefore, it is important for College units to have access to a comprehensive reporting data environment, user-friendly reporting tools, and training.

Development of an effective reporting strategy requires answering the following questions:

A. Organization – who will provide the leadership and support for improving reporting?
B. Needs Analysis – what are the key, shared requirements?
C. Roadmap – where do we want to be and when?
D. Implementation – how do we get there?

The following steps have been collaboratively defined to improve information access and advance a distributed reporting environment within Washburn:

**A. Organization**

A small reporting task force was established to guide the reporting project and to collaborate with University leadership to lay the foundation for the development of a decision support strategy that utilizes a data warehouse concept and distributed reporting.

The Reporting Task Force consists of the following membership:

1. Nancy Tate, Associate Vice President for Academic Affairs (Convener)
2. Melodie Christal, Director, Institutional Research
3. Elliott Haugen, Interim CIO/Director, Information Systems and Services
4. Cindy Hornberger, Special Assistant to the President
5. Susan Jarchow, Assistant Director, Information Systems and Services
6. Chris Leach, Director of Finance
7. Donna LaLonde, Associate Professor
8. Richard Liedtke, Executive Director, Enrollment Management
9. David Sollars, Dean, School of Business
10. TBD, Washburn University Foundation

**B. Needs Analysis**

It is important to advance the entire University’s reporting capability, but this would be a huge and ambiguous undertaking. Therefore, reporting needs analysis and planning steps have begun in three areas: VPAA, Enrollment Management, and VPAT. The VPAA has asked the deans to identity the types of reports and information they require on a routine basis. The University’s financial and budgeting areas have begun identifying common reports that are regularly
requested by deans and others. The Enrollment Management division has begun examining its core reporting requirements in the admissions area. Institutional Research (IR) and Information Systems and Services (ISS) staff have assisted this effort.

C. Roadmap

This reporting improvement project requires a formal strategy and implementation plan that will move Washburn to Level 3 of the Information Access and Decision Support model (page 2). A model of Washburn’s data warehouse and possible datamarts is shown below:

![Illustrative Model of Washburn’s Data Warehouse Environment]

Utilizing key, shared requirements discovered through the needs analysis, ISS and IR will collaborate in the execution of a plan and pilot project to establish a Washburn University data warehouse. This information resource will be the foundation for a distributed reporting environment whereby deans and enrollment management staff can run or create their own reports for planning, decision support, and assessment purposes.

D. Implementation Steps

This document recommends a project approach and describes steps to implement the proposed decision support reporting solution. The objective is to provide a high-level implementation plan that will serve as the basis for more detailed action plans, as necessary, to accomplish some of the tasks. The following implementation plan offers a timeline indicating when key steps and milestones will occur.

1. Data-Related Steps:

The successful start of this project is dependent upon limiting the scope to the top 5-to-10 reports identified during the needs analysis process in each of the following areas:
Reporting for the academic deans:
- Enrollment information (courses, registration, majors)
- Financial information

Reporting for enrollment management:
- Recruitment information
- Enrollment information

**Timeline**

Institutional Research (IR), in consultation with the appropriate units and with support from ISS, will be responsible for addressing the following timeline and tasks.

a. **By June 30, 2011:**
   - Develop a task list with targeted dates for the functional implementation.
   - Create a data dictionary to include Banner and non-Banner data fields using accepted Washburn terminology. For non-Banner data, a mechanism for systematic collecting, reviewing, and uploading non-Banner data will be established. Assess progress and re-configure job assignments to respond to project resource needs, if necessary.

b. **By July 15, 2011:**
   - Contact and/or visit personnel at nearby universities to obtain lessons learned from data warehouse implementations utilizing SunGard’s **ODS (Operational Data Store)**.

   The **ODS** is a SunGard product that manages each datamart and its contents and presents this data in a format that promotes ease of retrieval and analysis. The ODS facilitates operational ad hoc reporting by gathering, transforming and storing data from Banner through scheduled processes; the data is refreshed regularly from the live production Banner files. ODS data may originate from sources other than Banner, e.g., e-commerce systems, alumni, and external sources.

   c. **By July 31, 2011:**
      - Develop and implement training for pilot project users on existing reports and the use of Excel.
      - Determine the 5-10 enrollment, financial, and recruitment pilot project reports and design the layout of these reports.
      - Review ODS data for new fieldnames and definitions that correspond to items in the Banner data dictionary needed for the reports defined above.

   d. **By August 31, 2011:**
      - Validate the corresponding data elements in Banner and the ODS for selected data by running balancing reports in a static testing environment where data is not flowing from Banner, and develop a strategy for cleansing data in Banner, if necessary. If additional data elements are necessary, request additional data mappings from ISS.
- Re-validate the corresponding data elements in Banner and the ODS for selected data utilizing dynamically refreshing ODS testing environment.

- Assess progress and re-configure job assignments to respond to project resource needs, if necessary.

**e. During fall 2011:**

- Where appropriate, migrate each reporting source to the ODS/data warehouse environment. Existing reports that use data directly from the Banner database will still be available.

- Determine the schedule for freeze processes from the ODS.

  The freeze process allows identification of file(s) to capture at a specific moment in time, or “freeze” point. This “frozen” data is added to ODS as new **datamart** tables and used for reporting or comparative analysis.

- Develop a process for evaluating available reporting tools, evaluate the tools, and make recommendations for additional licensing, if necessary.

- Deliver capability to distribute desired reports by the end of the 2011 calendar year.

- Solicit users to test reports which are generated.

- Provide training on running the reports.

- Seek feedback to assess the success of the project (datamarts and reports).

- Determine necessary steps to modify the pilot project, based on input from the Technology Steering Committee and others, to move to a phase two – additional distributed use and

**f. During spring 2012 and going forward:**

- Identify additional distributed reporting requirements; determine and communicate priorities, plans, and training opportunities.

- Continue to expand the value and use of distributed reporting within the University.

**2. Technology-related Steps:**

ISS will be responsible for the following schedule and the tasks associated with providing the infrastructure and modifications necessary to create the Washburn data warehouse.

**Timeline**

**a. By June 30, 2011**

- Develop a static testing environment for comparing Banner data to frozen ODS data.

- Plan for technical training needs to support the Washburn data warehouse.

- Apply ODS 8.1 patches in the Banner/ODS test environment (excluding Oracle 11g.)

- Provide a demo of ODS self-service to IR and other pilot project users.
b. **By July 31, 2011**

- Provide a demo of ODS metadata screens and how to use them to IR and pilot project users.
- Provide demos of the Cognos and Argos tools to IR and other pilot project users.
- Upgrade the ODS test environment Oracle platform, including the Oracle Warehouse Builder, to 11.2.0.2, and apply any remaining ODS patches, when SunGard completes certification of ODS 8.1 with Oracle 11.2.0.2.
- Extract, transfer and load (ETL) data from Banner to the ODS test environment and research processes to understand how ETL works.
- Review ODS data needed to provide for the creation of SQL functions on the ODS side that correspond to home-grown Banner SQL functions.

c. **By August 31, 2011**

- Identify defects and implement workarounds.
- Establish and implement refresh schedule in the test environment.
- Plan for security, performance and storage requirements of the data warehouse.
- Assess progress and re-configure job assignments to respond to project resource needs, if necessary.

d. **During Fall, 2011**

- Repeat the development and test steps on ODS production server.
- Install a production Cognos server linked to the ODS production server, if necessary.
- Based upon functionally identified needs, implement a “freeze” schedule for selected data in the Washburn data warehouse.
- Assist in the development of custom ODS views of data and self-service reports.
- Plan for migration to Oracle Fusion Middleware and new architecture required for ODS 8.2/8.3, Oracle Streams.

### III. Future Solution Development

Pending the successful creation of a data warehouse that supports the reporting needs for the academic deans and enrollment management, the University will be in a position to develop a strategy to address remaining elements in Level 4 and 5 of the Information Access and Decision Support model (see page 2). These include

- Provide improved information access for decision support across the University.
- Build an institutional data repository for long-term trend analysis.
- Provide an information layer for key performance indicators, i.e., data dashboards.
- Establish a central repository for University performance-related and assessment-related data.