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Business Intelligence Competency Center – Maine Medical Center
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ABSTRACT

Maine Medical Center has employed a Business Intelligence Competency Center model for SAS® Enterprise BI Server and SAS® Strategic Performance Management projects. Maine Medical Center has utilized a cross-functional approach, involving data analysts, nurses, project managers, clinicians within the Center for Performance Improvement (CPI) using SAS® Business Analytics.

BUSINESS INTELLIGENCE COMPETENCY – MANAGING THE BI EFFORT AT MAINE MEDICAL CENTER

Establishing a competency in Business Intelligence (BI) has proven to be a significant challenge to many organizations. A traditional IT deployment effort often underestimates the unique issues associated with BI projects. Issues such as governance, executive sponsorship, data quality, data transformation and content delivery must all be weighed at the outset of any project.

The Gartner Group has written extensively on the subject of organizing the Business Intelligence effort and has championed the establishment of a Business Intelligence Competency Center (BICC) to be responsible for BI promotion, management and user adoption and training efforts throughout the organization.
Source: Hostmann, William, *"The Five Fatal Flaws of Business Intelligence"*

A Business Intelligence Competency Center serves an organization such as Maine Medical Center as a truly cross-functional team that has a permanent and well defined organizational structure. Each member of a BICC has a well defined set of roles and responsibilities, all serving the common goal of fulfilling responsive and consistent business intelligence within the organization.

FUNCTIONAL AREAS WITHIN A BICC

Determining the functional areas required for a comprehensive Business Intelligence organization is the first key challenge. What are the common tasks associated with Business Intelligence in our organization? What organizational relationships are there to manage? What are the roles?

In figure 1, the functional areas and relationships have been defined using a BICC. Sponsorship and Governance is a crucial part of this effort, and provides a foundation for BI direction and adoption. One of the key roles of a BICC is to manage and foster this relationship, and to be agile to respond to information requests from the organization.

The **BI Program Management** area serves as the primary liaison between the stakeholders and BI information delivery. This role also:

Assists in developing departmental requirements
Manages BI resources
Leads and manages BI initiatives
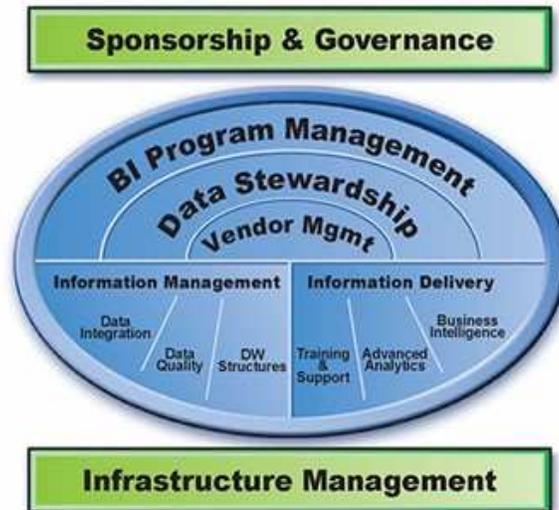
Figure 1 - SAS BI Competency Center - courtesy of SAS Institute

Another crucial activity is to lead the **Data Stewardship** effort within the organization. This area includes establishing "organizational truth", ensuring data quality, defining measures and determining standards for reporting:

BI Vendor Management is also a critical function area within the BICC concept. As Business Intelligence grows within the organization, licenses must be managed, upgrades coordinated with stakeholders, implementations planned, as well as usability analysis performed on a regular basis with the user community.

An example of successful BI Vendor Management can be illustrated with the success of SAS Business Intelligence at Maine Medical Center – Center for Performance Improvement. MMC - CPI has been asked by SAS to provide written and video case studies of their BI efforts in health care, which are used by SAS on their website. This provides excellent visibility for Maine Medical Center within both the BI and Health Care communities. MMC – CPI has also been active in presenting its work at SAS User Conferences which fosters a positive relationship between SAS and MMC.

The diagram also breaks down two very critical functional areas within the BICC, Information Management and Information Delivery.

Information Management: This functional area includes the close partnership between the BICC and Information Systems for the following:
- Data Integration – the integration of operational data and the BI environment
  o Ensure that data is secure and HIPPA compliance monitored constantly
  o Security is consistently assessed and applied
  o Requirements for access (ex: OLE DB, ODBC) are clearly defined and communicated
  o System Analysts in BICC and IS work together on efforts
- Data Quality – ensuring consistency and clarity within the organization
  o BICC acts as liaison between executive sponsorship, IS and Departments to work towards "one version of the truth"
  o BICC is responsible for delivery and communication of data quality standards

Information Delivery: This functional area is critical as it provides a customer facing view of all BI efforts through reports, balanced scorecards, dashboards, and ad-hoc report requests for departments. Some of the key activities within this area include:
- Promotion of the BI information within the organization
  o Marketing BI efforts to all departments and stakeholders to ensure optimal BI ROI
- Data Mart design and utilization
  o Data is staged from the source system
  o Data transformations written based on user requirements
  o Load routines written to populate data marts

o   Data marts optimized for report access, queries and ad-hoc requests
- Data Analysis – a true cross functional BICC will employ and utilize data analysts with a variety of organizational backgrounds
- System Analysts – will manage the BI technology, data marts, BI development and act as liaisons with Information Systems
- User Support
  o   Support for power users in proper query and report development using client tools
  o   Support for end users of reports and balanced scorecards
- User Education
  o   Providing clear and concise documentation of existing BI
  o   Providing education and training on a regular basis

BEST LOCATION OF THE BUSINESS INTELLIGENCE COMPETENCY CENTER?

One of the key questions in the establishment and management of a Business Intelligence Competency Center is where will this be located within the organization. An examination of the functional areas defined above shows a clear inclination towards a customer facing, flexible, responsive and strategic management focused direction. A true BICC requires close contact with executive sponsorship, as well as a unique skill in collaborating with disparate departments and interests (Information Systems, Human Resources, Finance, Nursing etc…). Business Intelligence goes beyond an operational focus and requires the involvement of a truly cross-functional team to ensure that the strategic goals of the organization are met. Source: Forrester Research Business Intelligence webinar

A BICC must:
- Be able to clearly gather and disseminate user requirements and translate to Business Intelligence
- Provide clear communication through information delivery and customer relationships
- Provide leadership in the establishment of organizational truth
- Act as a liaison between stakeholders
- Be more customer focused as opposed to operational

The Center for Performance Improvement at Maine Medical Center employs many of the components of a BICC in its SAS BI efforts.

MAINE MEDICAL CENTER'S BI COMPETENCY

MISSION OF THE CENTER FOR PERFORMANCE IMPROVEMENT

The mission of the Center for Performance Improvement is to be dedicated to providing the CPI team and its customers with the resources and tools needed to promote quality, patient safety and satisfaction through:

- Enhancing communication and collaboration among CPI staff and throughout the institution
- Providing education to MMC staff, including links to external sources
- Serving as a data repository
- Providing a project request and management tool
- Promoting the Center for Performance Improvement

The stated mission of the Center for Performance Improvement is well aligned with the model of a Business Intelligence Competency Center and has served the organization well in the implementation and use of SAS Business Intelligence.

USING SAS TO ACHIEVE ORGANIZATIONAL GOALS

One of the key challenges Maine Medical Center faced when it evaluated a Business Intelligence Solution was a suite of products that would help to consistently drive improvement throughout Maine Medical Center as well as to provide an accurate and timely tool for publishing critical performance information. SAS Business Intelligence was determined to be the best tool for MMC's analytic and reporting needs which include such areas as:

- Access to many data sources throughout the organization
- Balanced Scorecards automation for such diverse areas as Nursing and Geriatrics
- Publishing non CPI generated reports, such as the epidemiology generated reports monitoring hand washing compliance
- Analysis of patient care and financial objectives
- Executive Dashboards and Data Entry Screens for feedback
- Numerous other measures
  - Department specific
  - Multidisciplinary

Establishing Business Intelligence within an organization like Maine Medical Center is a complex task. BI goes beyond traditional operational IT efforts and requires the coordination of many disciplines within the organization. The Center for Performance Improvement has attempted to bring these different groups together with the common aim of constant improvement within the organization as a whole.
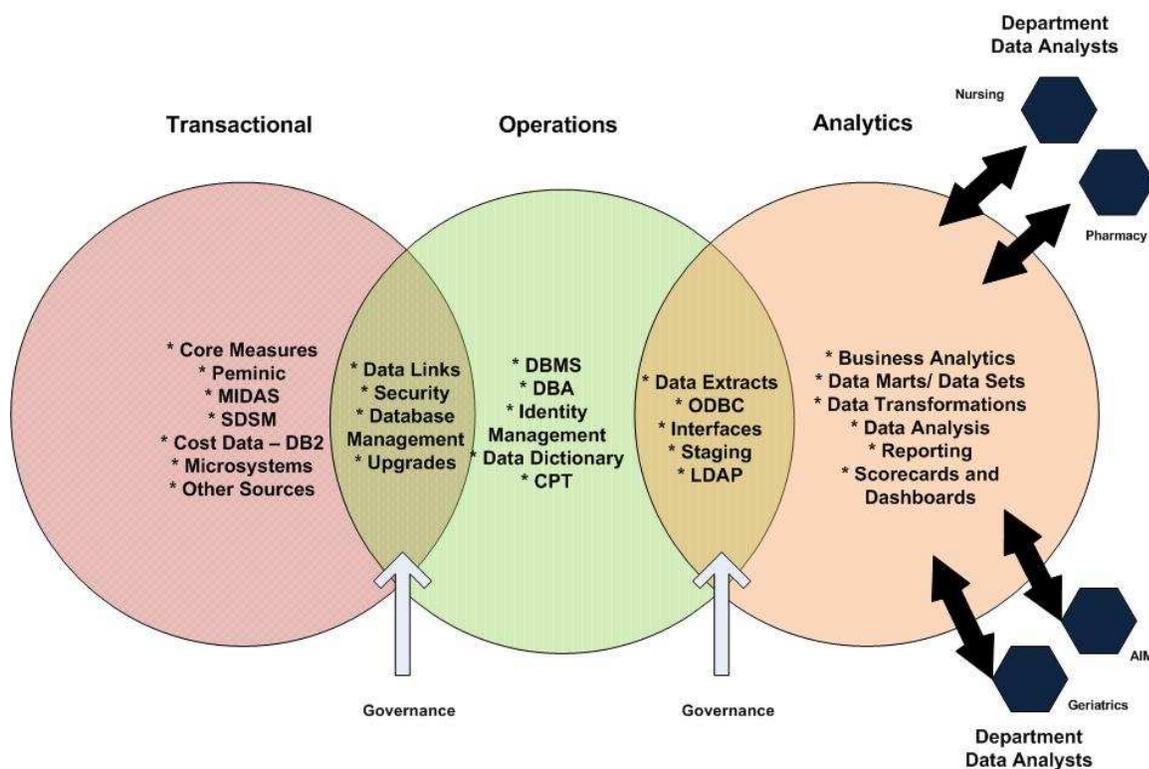
Figure 2 - Key Analysis Areas at Maine Medical Center
Three key analysis areas have been identified by Maine Medical Center as vital to optimizing the success of BI in the organization. The diagram above shows the transactional, operational and analytics areas, as well as brief detail on each.

The **Transactional** area represents all of the data sources available to the organization including vendors or departments responsible for the development of those sources.

Some of the common tasks associated with this area include database security and determining HIPPA compliance, managing relationships with external data source vendors and Information Systems for upgrades and improvements to existing products and efficient database management.

The **Operations** area ensures 24 x 7 access to all information systems at Maine Medical Center, which is critical to its operation. For the purposes of data delivery, the operations area provides valuable database management services, ensures that data dictionaries are maintained and available, provide help desk and desktop support, project management for new IT initiatives and identity management that is critical for security and audit tracking for applications.

The **Analytics** area most closely aligns to the Center for Performance Improvement - BI model that is currently provided. Some of the key functional tasks provided by the Analytics area include the development and maintenance of balanced scorecards, executive dashboards for departmental and enterprise use, as well as performing a number of ad-hoc and strategic efforts.

The effective performance of these functions has been critical in the success of business intelligence at Maine Medical Center. CPI has looked to constantly improve processes through research of best practices within business intelligence as well as an increased emphasis on promoting data quality and user education.

WHERE WE ARE TODAY?

Through the use of a Business Intelligence Competency Center model, Maine Medical Center has been able to define a BI strategy, based on:

1. **Identifying information gaps within our organization:**

Identifying information gaps at Maine Medical Center has evolved through working with each individual department, with a constant focus on enterprise needs. A constant "Reinventing the wheel" mentality has been overcome through employing the BICC model and using the unique nature of the Center for Performance Improvement to bring IT, Analytics and Clinical resources together.

2. **Definition of roles:**

The definition of roles within our BICC has been critical in defining the work that the Center for Performance Improvement performs for the organization. Role definition has resulted in the ability to create "virtual teams", depending on the unique needs of each project. Some of these roles include:
- SAS Administration and Development
- Analytics
- Project Managers
- Clinicians
- Program Managers

3. **Overcoming an "Information Silo Culture"**

Existing attitudes, beliefs and opinions often are underestimated when initiating a business intelligence project for the first time. The view that BI needs to be "driven by IT" has been a difficult hurdle at Maine Medical Center. Defining a BI strategy over time has helped to build confidence in our efforts.

The Center of Performance Improvement has built a collaborative and interdependent environment to define requirements, determine organizational truth and seek constant improvement.

MAINE MEDICAL CENTER AND THE INFORMATION EVOLUTION MODEL

The Center for Performance Improvement has sought to continuously examine its BI strategy and determine where we fit as an organization on the Information Evolution Model. This model has helped us to define where we have been and where we still need to go in terms of our overall business intelligence strategy.

The diagram shown below illustrates where Maine Medical sees itself within the information evolution hierarchy.

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Information Evolution Model – Maine Medical Center
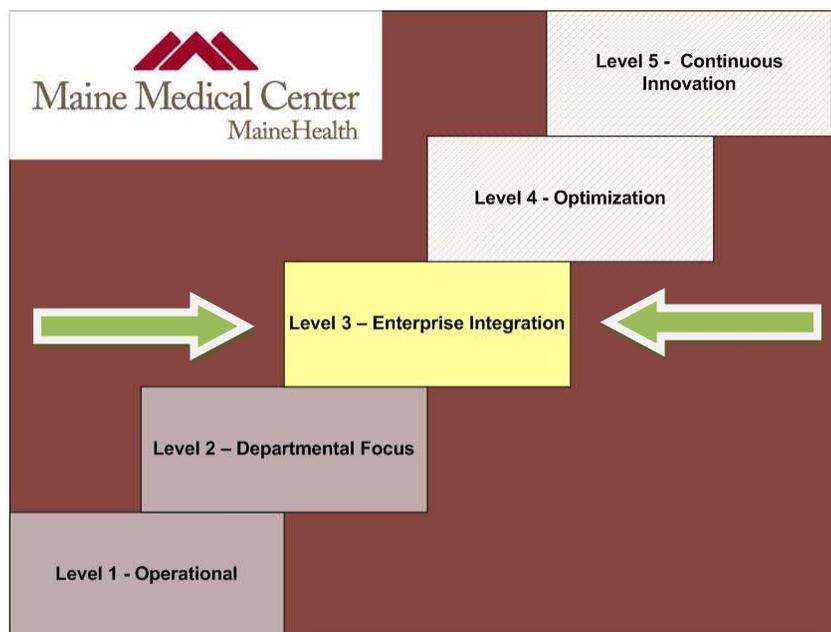
Figure 3 - Information Evolution Model - MMC (illustration derived from Miller, Brautigam, Gerlach - Business Intelligence Competency Centers

Business intelligence at Maine Medical Center has certain been an evolutionary process. The SAS BI Platform was installed to deal with a dual purpose. The first goal was to provide a vehicle for the development of balanced scorecards to track critical metrics vital to individual departments. At this beginning or **"Operational"** stage, the Center for Performance Improvement identified many information silos, with a paucity of awareness of "organizational truth" and a hostile environment for data access. Many projects during this stage were ad-hoc in nature, without regard to long-term planning, or re-use of effort.

The delivery of balanced scorecards on SAS Portal to the individual departments resulted in an increase in data requests, as well as requests for additional scorecards and metrics. This **"Departmental Focus"** stage resulted in a dramatic increase in published scorecards, but again with little focus on the enterprise as a whole.

Through information evolution, Maine Medical Center currently finds itself at the Enterprise Integration stage. The current efforts involve clear definition of roles, creating virtual teams, a long awaited formal collaboration with the Information Systems division and an effort to build enterprise business intelligence.

MAINE MEDICAL CENTER – HOW DO WE GO FURTHER?

Many BI organizations reach the enterprise integration stage of the model and stop. Tools such as OLAP cubes, stored processes and balanced scorecards have met the requirements of a vast number of departmental and cross-departmental interests. Maine Medical Center has recognized the need to evolve beyond meeting requirements and work towards such goals as predictive modeling.

The biggest step in our evolution to date has been a renewed intent to collaborate with our Information Systems division. A small, self-sufficient BICC can only benefit from the expertise and resources of a larger, operationally focused information systems group. The efforts to break down barriers have faced very few technical issues, with political issues a predominate factor.

As part of an integrated effort between Maine Medical Center and Maine Health, a "Virtual BI Competency Group" was developed to better link operational and analytic resources within the organization. The working model is shown below:
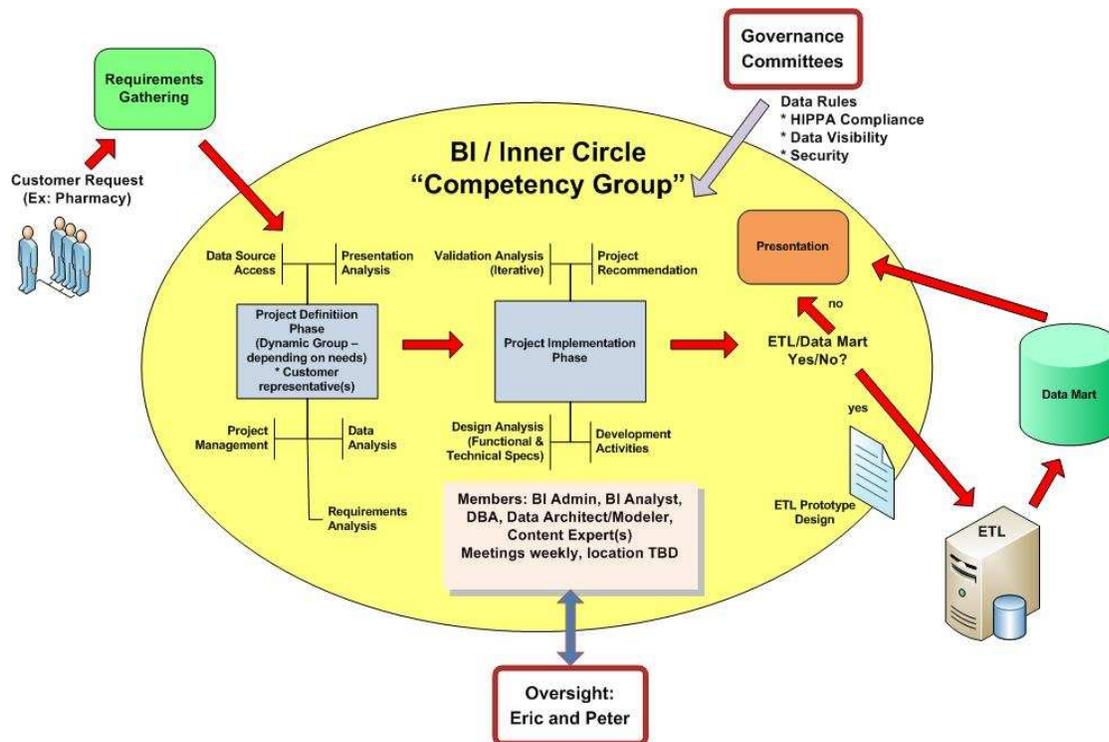
Figure 4 - Working Model for BI Collaboration

This model attempts to virtually define the BI process and to identify the roles required to make this work. The virtual teams required at the project definition and implementation phases bring in appropriate resources, to focus both on the project as well as its impact to the enterprise.

WHAT ARE THE CONCLUSIONS?

There are many questions to answer when trying to determine the best way to pursue business intelligence within our organization.

- Do we have the executive sponsorship of the project and maintain those relationships?
- Are we able to be flexible and quickly respond to business requirements and translate those requirements into appropriate BI content?
- Do we have a strategic focus and mission?
- Do we strive for consistent and measurable improvement for the organization?
- Do we work towards data driven business decision making?

The answers to all of these questions illustrate the need to continue to grow our Business Intelligence Competency Center model for our business intelligence efforts at Maine Medical Center.

There is enormous room to grow however. The Center for Performance Improvement is currently looking to perform analytics within the organization through:

- Leveraging data to enable and optimize daily, and real-time access to analytics
- Create and leverage SAS technology to optimize information delivery to decision makers
- Improved data governance to insure that the data can be trusted
- Forecasting
- BI Education
- Data Collection Management

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