

Paper 177-2011

BI Competency Center 2.0 – Putting the model into practice

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ABSTRACT

Maine Medical Center has created a BI Competency Center model to champion Business Analytics throughout the organization. Virtual teams are created and a BICC collaboration model are defined at the start of every project, allowing for increased efficiencies in planning, research, development and data validation. This paper delves deeper into the BICC as a project planning and execution method, as well as shares the benefits of a virtual collaboration model to deepen the role of analytics within an organization.

THE BUSINESS INTELLIGENCE COMPETENCY CENTER IN PRACTICE

Maine Medical Center has utilized a Business Intelligence Competency Center to formulate “Virtual Teams” for BI projects using SAS®. The Center for Performance Improvement brings together clinicians, nurses, administrators, financial analysts and information technology specialists for projects seeking to improve quality, patient safety and continuous improvement. SAS® Business Intelligence is at the forefront in serving the data needs of these cross-functional teams and providing a consistent approach.

Business Intelligence at Maine Medical Center extends well beyond a traditional IT-centric approach, bringing analytics closer to clinicians and front-line staff than IT based solutions. The work that has gone into defining the Business Intelligence Competency has resulted in a unique project management approach and has proven to be very effective.

SAS® Business Intelligence is employed to:

- Serve as a data repository for clinicians, nurses, financial analysts, researchers and administration
- Provide Balanced Scorecards to continually monitor improvement in such areas as:
 - Central Line Infection Rates
 - Patient Satisfaction
 - Patient Flow
 - Average Length of Stay
- Executive Dashboards
- Custom entry forms to replace paper-based survey processes to provide real-time feedback

The BICC definition efforts at Maine Medical Center resulted in a Virtual Team concept, one that seeks to foster cooperation between clinicians, business intelligence professionals and IT. This effort to conceptualize better cooperation between departments and interests has resulted in the BICC Project model, which is shown in the following diagram.

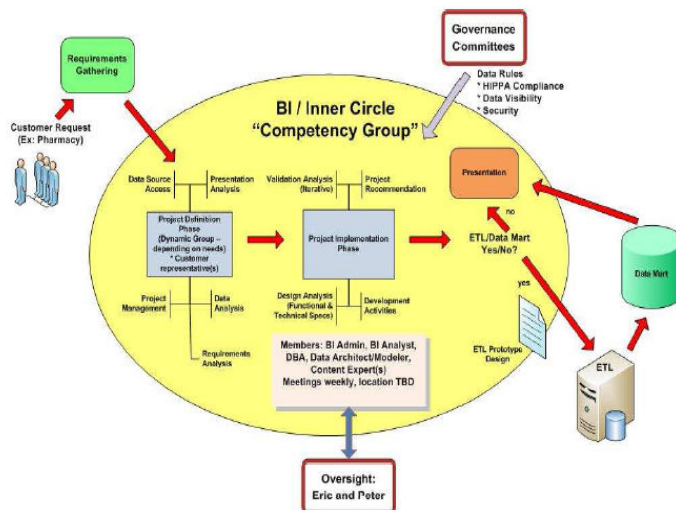


Figure 1 - MMC BI Competency Project Model

ORGANIZING THE EFFORT

The concept of a virtual team was solidified using the BI Competency Process model. The diagram seeks to provide a vehicle for more active participation by front-line staff. The BICC model seeks input from “subject experts” at all phases, with these individuals defined in a virtual roster. Deliverables are shared with these experts early, and progress is shown through periodic demonstrations as well as updates of the BI Process model diagram. Key deliverables and tasks are highlighted in the diagram, and distributed to stakeholders each week. Sharing the process model diagram has resulted in a substantial increase in feedback and has nurtured a sense of teamwork that previously did not exist on BI projects.

Rosters for each phase of the project are defined to better focus the effort and to maximize the efforts of subject matter experts and BI developers.

In the next section, we will examine how the Business Intelligence Competency process is put into practice on a specific project. Areas of strength and improvement will be identified, providing valuable feedback to all participants in the project process.

Using the Business Intelligence Competency Model: NRC Picker – Patient Satisfaction Dashboard

Maine Medical Center utilizes NRC Picker Patient Experience surveys to monitor patient experience as well as the impact of quality improvement programs that are developed and implemented. Patient satisfaction surveys often resulted in artificially inflated results, with little actionable information provided to decision makers. Measuring patient experience looks at the entire continuum of care, and looks to measure behavior and actions. An example of such a question is shown below:

“During this hospital stay, how often did nurses listen carefully to you?”	
Always	The behavior/process occurred consistently at all times.
Usually/Sometimes	The behavior/process did occur, but not as consistently as it should have from the perspective of the patient. This scale provides an assessment of the frequency, even when it is less than always.
Never	The behavior/process did not occur at all.

Figure 2 - From NRC Picker

THE REQUIREMENT

The Business Intelligence Competency Center was asked to develop a method for providing a dashboard user experience for Maine Medical Center Chiefs to look at patient experience scores by service line. The dashboard should be displayed on the SAS Information Portal and be visible to only chiefs and their staff. The proposed dashboard seeks to display questions of interest to the Medical community and provide instant notification (by email) to users when updates are available.

NRC Picker reports are currently available in PDF format via download and sent to interested individuals at the Medical Center. The Picker reports are then stored on the SAS MIDTIER server for display on the SAS Information Portal. The dashboard project seeks to offer a more actionable format for Chiefs to monitor their performance and suggest internal improvements.

During the requirements gathering phase, a Business Intelligence Competency project diagram was drawn up and a roster was developed based on the unique needs of this project. The roster included a process improvement specialists, BI developers, executives, IT and front-line staff. The virtual team was available at all phases of the project, including providing feedback on data aggregation, presentation and distribution ideas. Through continuous involvement with subject matter experts, the project was able to minimize re-work and led to targeted deliverables.

BUILDING THE VIRTUAL TEAM

The Business Intelligence Competency process model was used in the NRC Picker Dashboard project to help determine the subject matter experts and staff required to carry this project to a successful result. Building a virtual team in the process model includes determining the resources necessary at the following phases:

- Requirements
- Design Process
- Development Process
- Implementation and Validation
- Sign-off and Follow up

The virtual project team also includes oversight in the form of “project champions”. These champions come from the different departments/stakeholders involved with the project. These individuals are responsible for ensuring collaboration as well as providing leadership in governance. All members of the virtual team roster receive project communication, as well as an updated BI Competency Process diagram, regardless of the phase of the project they are involved in. The virtual team is shown demonstrations of project progress and provides a key feedback function to the project. The NRC Picker project used demonstrations to focus the design and development efforts.

THE NRC PICKER DASHBOARD PROJECT

- Establishing a BICC Team

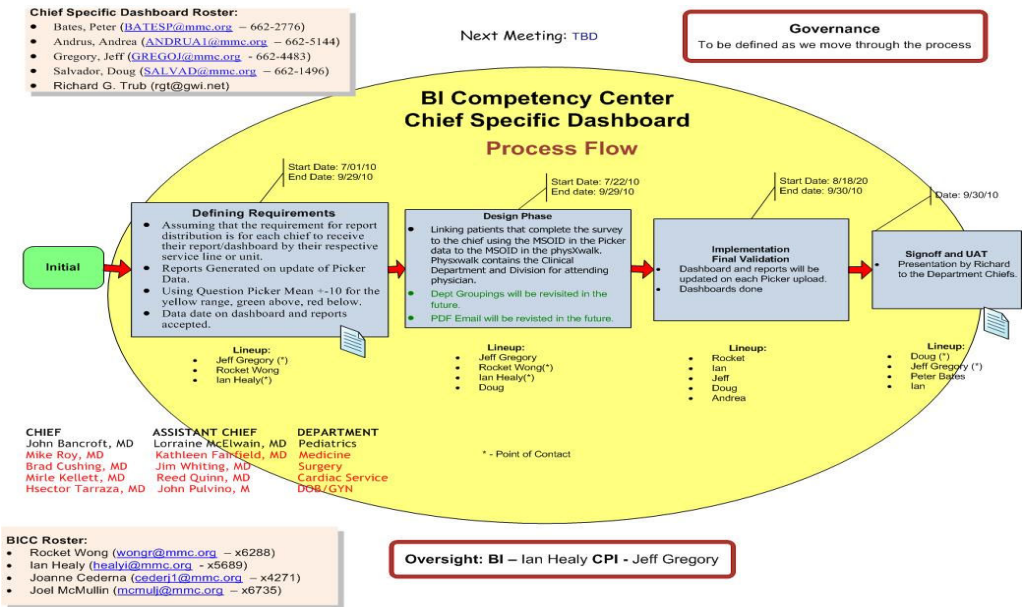


Figure 3 - Project Diagram

- Determining the questions
The questions were selected off the HCAHP Survey, ED Survey, and Inpatient Pediatric survey. Questions were selected because these were areas in which doctors have direct influence and could show improvement.
- Using BI Dashboard
The SAS BI Dashboard was used as opposed to employing a Balanced Scorecard using SAS Strategy Management. This decision was based on the requirement to provide physicians and chiefs with a quick, at-a-glance view about service line performance for a specific time period. The drill down functionality of Dashboards was used to provide trend analysis of patient experience areas for the individual service lines.

- E-mail Notification
A SAS stored process was developed to generate the underlying results of the dashboard. The stored process also sends out automatic e-mail alerts to chiefs and responsible staff when the question metrics are updated. The e-mail includes a link to the dashboard and is targeted specifically to the most recent location updated.
- Drill down reporting
The drill down functionality described above is a key driver for utilizing SAS Dashboards. Service Lines can see their progress with patient experience in more detail and focus on patient experience issues that could be improved.
- Validation
The BICC virtual team model was extremely useful during the validation process. SAS Developers, chiefs and patient safety volunteers were brought into the process early, identifying areas of improvement that resulted in a mature, tested final deliverable.

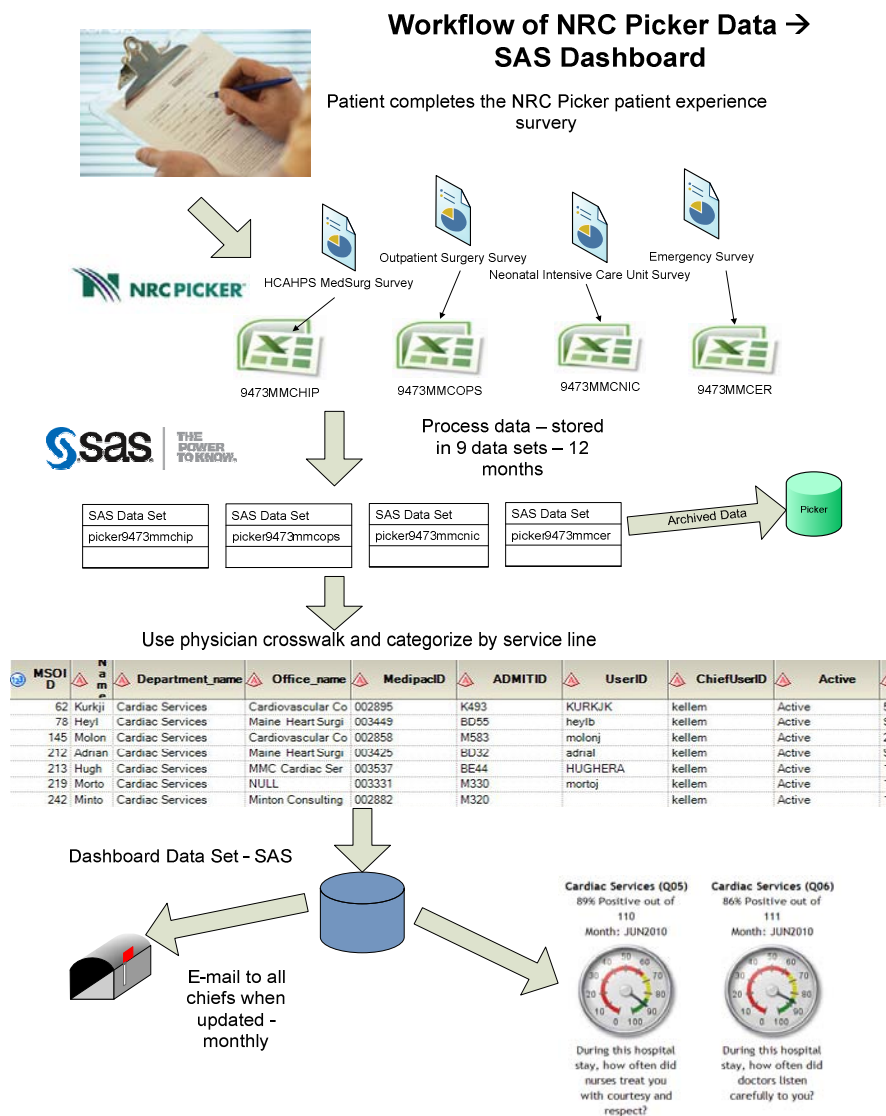
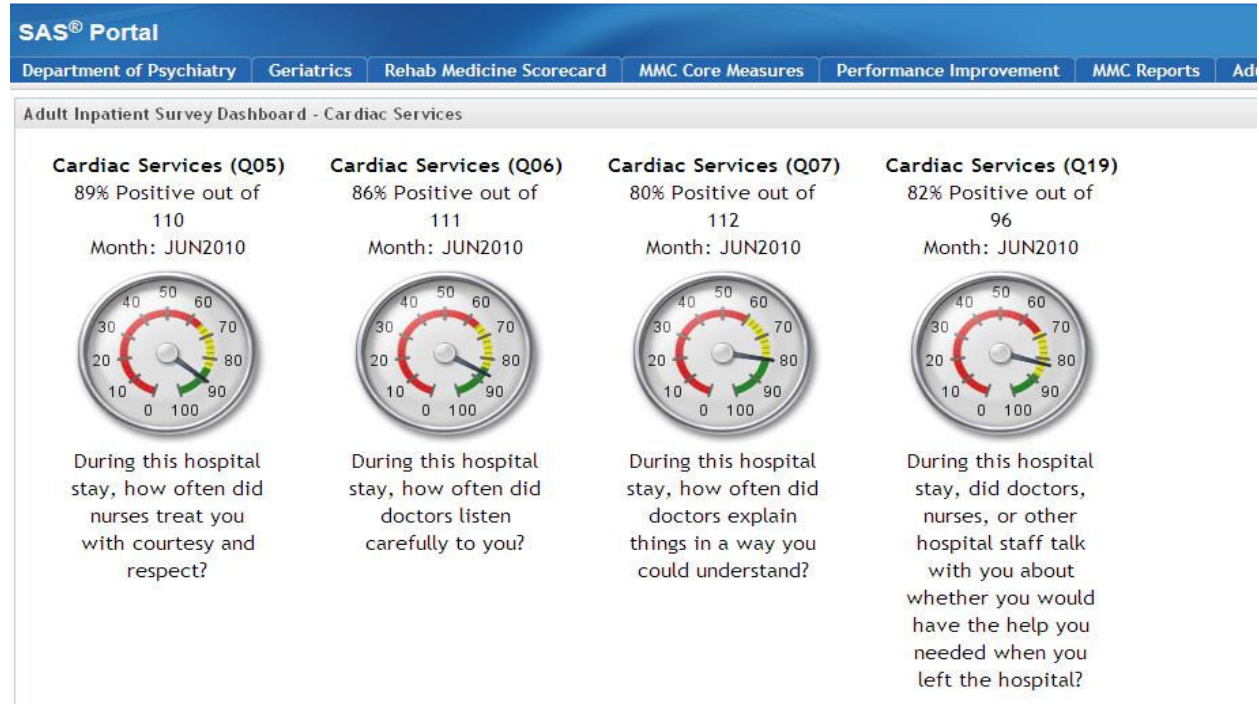


Figure 4 - Project Workflow

PROJECT RESULT:

Identified key patient experience questions and allowed Chiefs to monitor results



Cardiac Services
 During this hospital stay, how often did doctors explain things in a way you could understand?
 Month: JUL2010

Group	Responses	Positive Response %	Picker Mean %	Month Perf
CCM	46	78	71	▲
MCA	47	68	71	▲
MHSA	38	76	71	▲
OTHER	4	75	71	▲
	135	74	71	▲

Date of Report: 16OCT10
 Center for Performance Improvement

Cardiac Services Total
 During this hospital stay, how often did doctors explain things in a way you could understand?

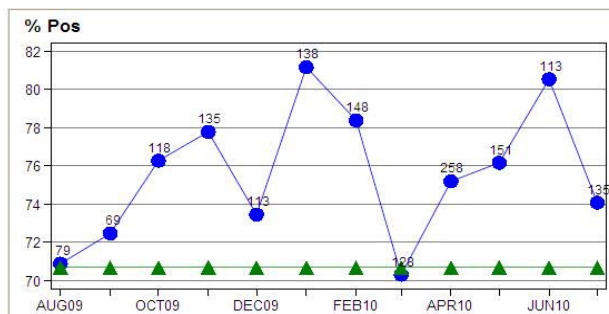


Figure 5 - Patient Experience Dashboard

WHY THE BI COMPETENCY MODEL IS IMPORTANT AT MAINE MEDICAL CENTER

The BI Competency Model was developed to address a number of growth concerns within the Center for Performance Improvement. SAS Business Intelligence has been an extremely effective platform for delivering data and answering the questions of leadership, physicians, nurses and administration.

The growing pains experienced by Maine Medical Center with SAS Business Intelligence were solidified with the ability to address most data questions with an escalated response. This success resulted in a limited ability to grow beyond serving as an “ad-hoc query repository” for many decision makers, researchers and clinicians.

The diagram below shows the current state (on the left) with the desired future state (on the right).

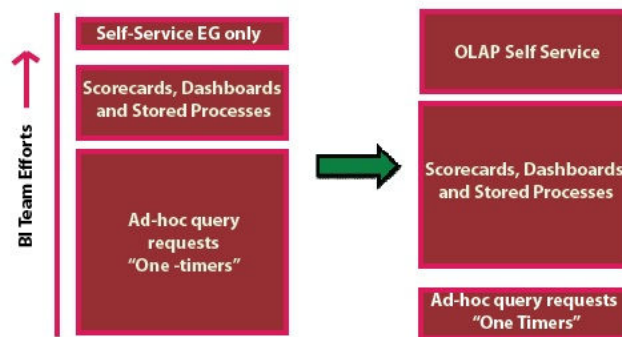


Figure 6 - MMC BI State Diagram

The primary function of business intelligence within Maine Medical Center was once the development of Scorecards and responding to Ad-hoc requests of clinicians and staff. Analysts within the small business intelligence group responded to questions through developing Projects in Enterprise Guide and distributing reports to the user community. This resulted in little investment on the part of the requestors in improving content delivery.

- Business Intelligence required extensive human intervention
- Enterprise Guide rolled out to all users, regardless of experience, resulting in degraded performance and duplication of effort
- Metrics on scorecard are not viewed frequently and acted upon

The Business Intelligence Competency Process model has sought to change this distribution. By engaging the customer at the outset and throughout the project life cycle, the user community has a vested stake in growing Business Intelligence. Dashboards such as NRC Picker provide a more effective delivery method for many departments. The NRC Picker project has gone further in setting up notification when dashboard indicators are updated. Maine Medical Center, with its recent upgrade to 9.2 and is now utilizing SAS OLAP Server, which is reducing the ad-hoc query demand and open up access to data throughout the organization. The Business Intelligence Competency process will play a key role in defining data cubes and determining governance.

FUTURE OF BI COMPETENCY – THE PROCESS ROADMAP

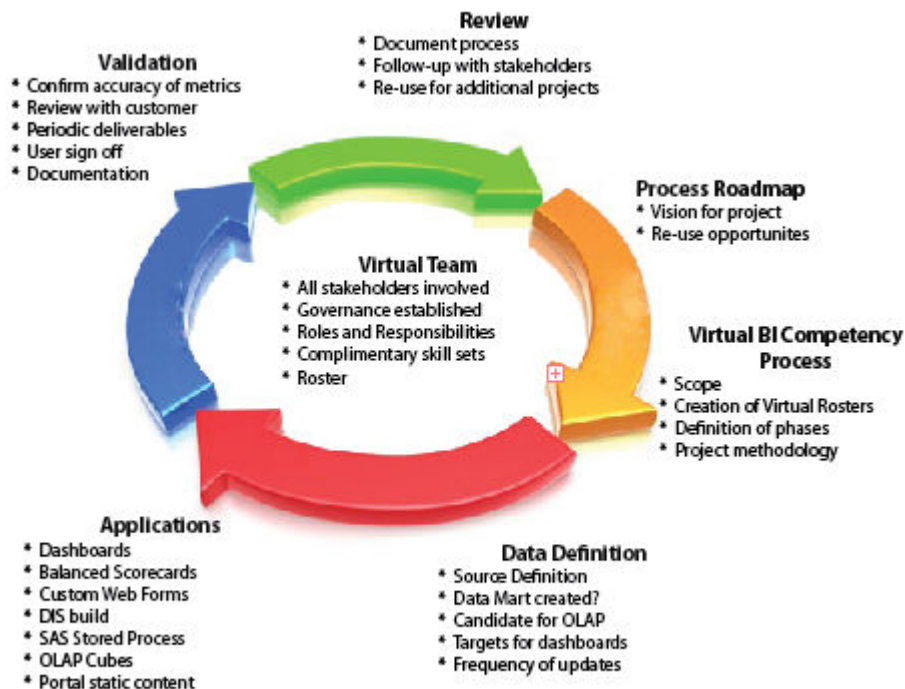


Figure 7 - BI Roadmap

CONCLUSION

The Business Intelligence Competency Model is crucial in bringing together the appropriate people and resources to accomplish great results. Maine Medical Center works at the beginning to identify the appropriate project roster, to communicate progress and involve the “virtual team” at every stage of the process. This significantly has reduced re-work and has resulted in well validated deliverables.

The model was important to the NRC Picker Dashboard project in that all stakeholder groups were engaged to contribute ideas and to lend their real-world expertise to the project. From the selection of the dashboard questions, to the look and feel of trend charts, the virtual team was active in working together, using the power of SAS Business Intelligence to produce data visualizations that are both actionable and effective.

Maine Medical Center continues to employ its BICC model on all new SAS Business Intelligence projects and this has resulted in increased investment in SAS and performance improvement efforts institution-wide.

SOURCES

Miller, Brautigam, Gerlach, “Business Intelligence Competency Centers: A Team Approach to Maximizing Competitive Advantage”, May 2006, Wiley

Healy, Ian, Wong, Rocket “Business Intelligence Competency – Maine Medical Center” Presentation to SAS Users Group International, Seattle, WA, April, 2010

CONTACT INFORMATION

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