Maximizing Your MEDITECH Investment with Dashboard-Driven Business Intelligence

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Current Situation

Healthcare delivery organizations are increasingly forced to deal with a number of difficult issues:

- Competition for patients who have more choices of healthcare providers and facilities and are better educated due to a wealth of internet-based medical information.

- A corresponding competition for skilled and experienced healthcare professionals from a shrinking labor pool.

- Changes to both governmental and commercial reimbursement systems that are moving toward more outcome-oriented, prospective payment plans.

- The imperative to continuously increase operational efficiencies while simultaneously increasing the quality of healthcare delivery.

- Complying with increasingly complex regulatory and accreditation requirements.

Central to resolving this multi-faceted challenge is the ability to derive meaningful insights from both the internal data generated by hospitals as well as data acquired from external sources such as benchmarking services and payers. Achieving these insights requires sifting through exponentially increasing data volumes to detect the most significant patterns and events. Once detected, this information must be presented in ways that are intuitively obvious; can be assimilated quickly; and are evaluated in the appropriate context. This data is needed at both the executive and staff levels, but must also provide the option to quickly view the underlying detail-level data and assumptions when necessary.

This paper discusses how Dimensional Insight's The Diver Solution for MEDITECH helps healthcare professionals maximize the return on their MEDITECH investment with transparent data access, seamless integration across virtually any internal or external data source, and an easily understood presentation of analytical reports using dashboards.

The Diver Solution for MEDITECH

Based on years of experience in the healthcare industry, Dimensional Insight's The Diver Solution for MEDITECH presents an industry-leading approach to leveraging the information content of the MEDITECH HIS database while preserving the richness of that data. DI's approach offers a compelling value proposition to MEDITECH customers based on the following four business intelligence requirements:

1. Access data from the MEDITECH HIS in a transparent and timely manner

2. Seamlessly integrate with a wide array of external data sources

3. Provide extensive application functionality while supporting customization

4. Display and present key insights in an intuitive, quickly understood framework

The following sections explore each requirement in detail, and build a compelling case for why The Diver Solution is the ideal business intelligence tool for MEDITECH-based healthcare organizations.

"MEDITECH is a great database but it is difficult to get data out of it, especially patient-level detail data. We wanted a solution that would allow us to access this information so we could easily analyze factors such as readmissions, turnover time, admission time-of-day, and staffing."

Michelle Heezen
Central Vermont Medical Center's (CVMC)
Budget & Reporting Manager

Accessing MEDITECH Data

The Diver Solution tool suite uses DI-Connect for MEDITECH, a cost-effective, low maintenance approach to accessing MEDITECH data. A small-footprint application that accesses and extracts data from the internal MEDITECH HIS database, DI-Connect offers an efficient alternative to MEDITECH NPR. This reduces both consulting costs and the significant burden typically shouldered by IT staff that deal with report-generation support tasks. With an installation time measured in hours and a minimal resource impact on the MEDITECH system, DI-Connect retrieves information at frequencies specific to a particular data series.

For example, census information needs to be refreshed multiple times per hour to provide an up-to-date view of patient traffic and bed availability, while certain financial data may only be updated nightly. Low frequency information can be scheduled for extraction during non-peak hours to further reduce resource demands on the MEDITECH system. DI-Connect for MEDITECH eliminates the need to invest resources in alternative data extraction and management solutions that may provide data access, yet add minimum value to the data.

The Diver Solution supports a wide array of data access options for both the MEDITECH environment and external data sources. ODBC-based retrieval from relational database management systems such as SQL Server, flat files, spreadsheets and an extensive collection of proprietary file formats from third party solution providers are all supported (see appendix). DI-CONNECT guarantees seamless, efficient data access to both MEDITECH MAGIC and Data Repository environments.

DI-CONNECT provides a critical link in the information chain: getting the right data out of MEDITECH, combined with external data sources at the appropriate time interval and frequency.

Integration with External Data Sources

Manipulating raw transactional MEDITECH data and merging it with disparate external sources is the means by which data is transformed into high quality information usable for analysis and decision making. For example, charge and procedure, time and attendance, and payroll data can be combined in order to calculate productivity metrics at the most appropriate and relevant levels of summarization, such as by acuity and accreditation level. These metrics could then be compared with internal targets, which might be managed in MEDITECH or perhaps in spreadsheets. External benchmark data could also be added to show how a health care organization's productivity compares with that of its peers.

Quality measures provide another very relevant example. The Joint Commission establishes accreditation requirements and periodically issues an "accreditation report card". Benchmark data from providers such as Solucient and UHS allow executives to measure performance of their own organization and easily generate comparisons against local competitors, federally-mandated quality benchmarks, and accreditation milestones. This information can also be used to fulfill regulatory reporting requirements.

> *"Distribution of data analysis is done mostly in Excel or from standard reports available in our systems.*
> *Dimensional Insight's solution is flexible and allows us to customize and automate this process to get the right information to the right people so that decisions can be made in a timely manner."*
>
> Jim Vaillancourt
> Outcomes Measurement & Reporting Manager
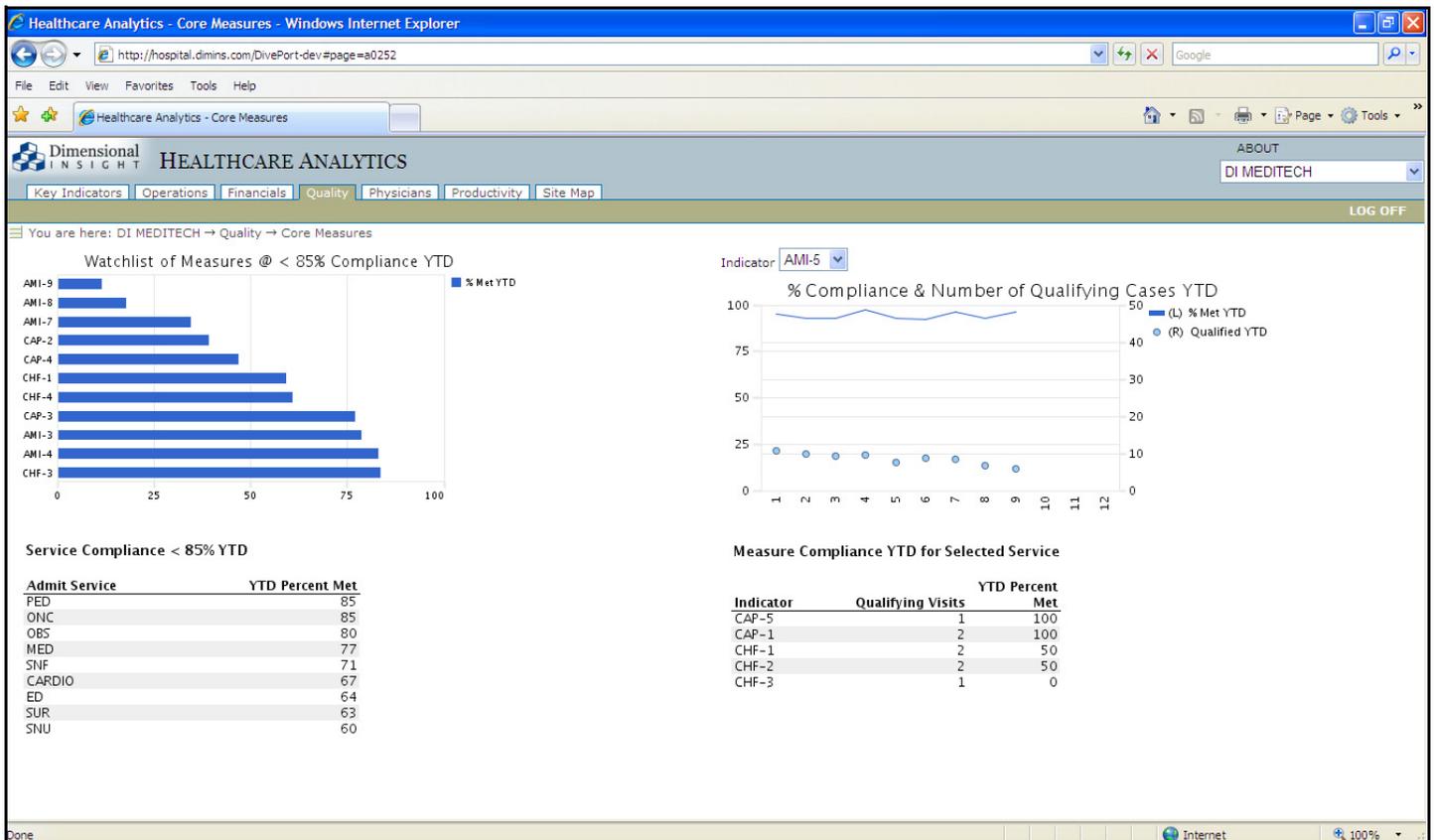> Lahey Clinic, Burlington, MA

Healthcare Analytics - Core Measures - Windows Internet Explorer

http://hospital.dimins.com/DivePort-dev#page=a0252

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Healthcare Analytics - Core Measures

ABOUT

DI MEDITECH

Dimensional INSIGHT HEALTHCARE ANALYTICS

Key Indicators | Operations | Financials | Quality | Physicians | Productivity | Site Map

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You are here: DI MEDITECH → Quality → Core Measures

Watchlist of Measures @ < 85% Compliance YTD

% Met YTD

AMI-9, AMI-8, AMI-7, CAP-2, CAP-4, CHF-1, CHF-4, CAP-3, AMI-3, AMI-4, CHF-3

0 25 50 75 100

Indicator AMI-5

% Compliance & Number of Qualifying Cases YTD

(L) % Met YTD
(R) Qualified YTD

100 / 75 / 50 / 25 / 0   —   50 / 40 / 30 / 20 / 10 / 0

1 2 3 4 5 6 7 8 9 10 11 12

Service Compliance < 85% YTD

Admit Service	YTD Percent Met
PED	85
ONC	85
OBS	80
MED	77
SNF	71
CARDIO	67
ED	64
SUR	63
SNU	60

Measure Compliance YTD for Selected Service

Indicator	Qualifying Visits	YTD Percent Met
CAP-5	1	100
CAP-1	2	100
CHF-1	2	50
CHF-2	2	50
CHF-3	1	0

Done   Internet   100%

Figure 1 - Regulatory compliance benchmarks incorporating Joint Commission core measures from external data source.

For example, hospitals are being required to collect and report increasing volumes of quality-oriented data, especially in the domain of hospital acquired infections (HAI's). Nineteen states have already enacted HAI-reporting legislation, and this trend is expected to continue. Internally, HAI data allows management to ensure that acceptable levels of patient care are provided. Accompanying the increase in reporting requirements, insurers are shifting their reimbursement models to "prospective payment" which rewards high quality care and penalizes marginal organizations. Bottom line financial impacts will be quite pronounced once this trend is fully realized across the healthcare industry. Customers and investment capital will inevitably migrate to the highest quality healthcare providers, placing a premium on metrics-based management. HAI reporting is only one of several areas that will face increasing scrutiny in today's healthcare environment, underscoring the need for a robust business intelligence tool.

"According to the U.S. Centers for Disease Control and Prevention (CDC), approximately 36 million people are admitted to U.S. hospitals every year, and nearly two million patients annually acquire an infection while being treated; over 80,000 patients die from complications resulting from the infection. The CDC estimates that up to one-third of infections acquired in health settings are preventable."

"Hospital-Acquired Infections a Menacing Trend in Health Care Settings"
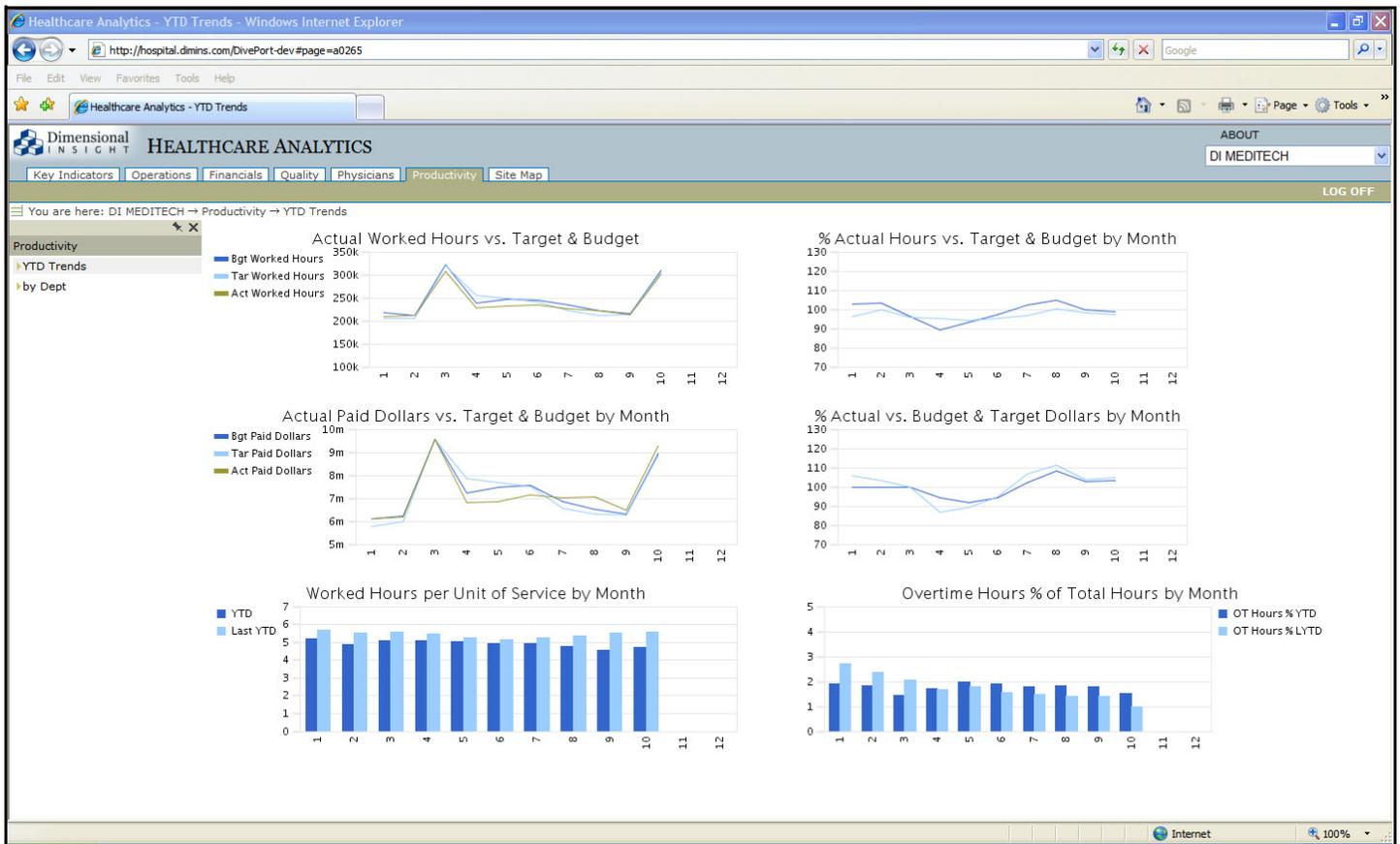Water Quality & Health Council, 2008.

Figure 2 - In depth analysis of various admission, activity, and reimbursement Key Performance Indicators (KPI's).

The Diver Solution for MEDITECH establishes an industry standard in versatility and connectivity, allowing for data integration between MEDITECH hosted data and external sources. Most importantly, the actionable information derived from this powerful functionality affords healthcare staff and management unparalleled insight into the complex issues confronting their organizations.

Application Functionality

In the absence of a business intelligence tool such as The Diver Solution, healthcare providers typically resort to spreadsheet-based data manipulation to perform comparisons and compile Key Performance Indicators (KPI's). The process is inherently time intensive and error prone, consuming valuable staff resources while delaying the availability of critical information.

Dissemination of sensitive information is also problematic in a spreadsheet-based environment. Staff may not be privy to financial data that should only be accessible by senior management, for example. The Diver Solution allows access privileges to be set at any level of granularity, ensuring that every data point is viewable only by permitted individuals.

Spreadsheets are easily manipulated and corrupted, sometimes inadvertently. The Diver Solution's sophisticated security administration capability assures that only one "version of the truth" exists throughout the enterprise. Timeliness and data relevance can also be plagued by delays in extracting MEDITECH data via NPR and then having to generate spreadsheets manually. DI-Connect coupled with The Diver Solution guarantees on-time delivery of critical reports and data views due to the automation of extraction, transformation and report generation tasks.

Standard analytical constructs such as time series, year-to-date, and year-over-year comparisons all require manual formula creation when using spreadsheets. The Diver Solution provides these operations as standard functionality, eliminating the need to create and validate cumbersome spreadsheet formulas. Staff can define targets for various time frequencies and levels of organizational granularity. For example, some targets may be adequately represented at a hospital-wide level while others may need to be assigned and tracked at the level of a particular business unit such as Intensive Care. One example would be staff hours per admission adjusted for acuity, which is watched daily. Tracking and measuring at the appropriate organizational level facilitates more effective management.

Deployment Options

Deployment flexibility and scalability are hallmarks of The Diver Solution. The Diver Solution easily scales from a single-server installation to multiple servers as a hospital's user base grows.

Healthcare providers may choose to host the application internally or subscribe to Dimensional Insight's convenient InterReport on-demand business intelligence service, also referred to as Software-as-a-Service (SaaS). This eliminates the need to purchase and support hardware internally.
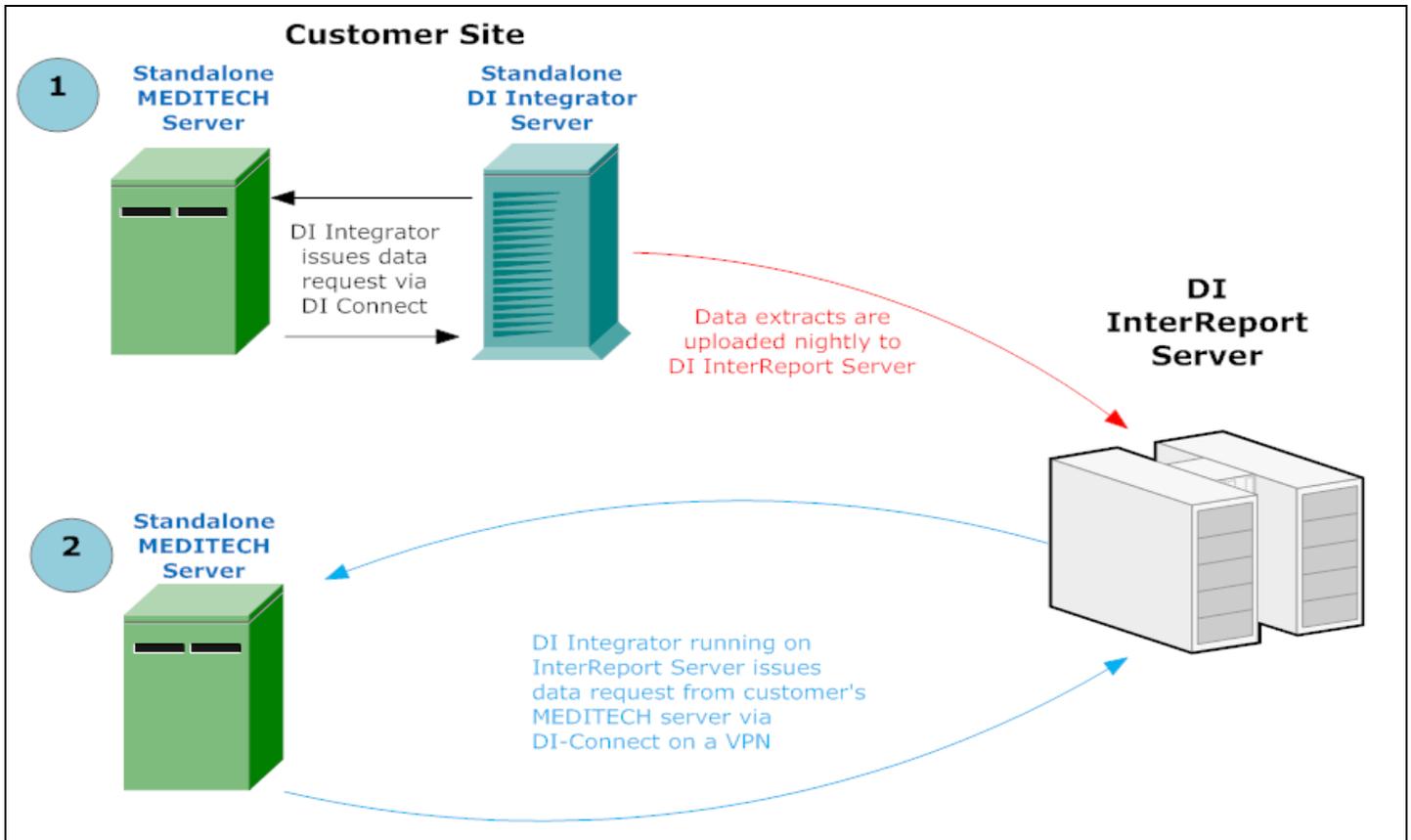

Figure 3 - The Diver Solution for MEDITECH offers flexible on-demand business intelligence deployment options.

The Diver Solution's rich suite of standard application logic, the ability to integrate targets with actual performance, and standard views like time-series makes it the tool of choice for healthcare executives, managers and staff alike. Dimensional Insight's seasoned consultants and developers have integrated numerous MEDITECH-based healthcare facilities with The Diver Solution. The knowledge gained has been incorporated into DI-Connect, creating an industry-leading connectivity application for MEDITECH customers.

Presentation and Visualization

Based on a patented multi-dimensional data model that provides unconstrained navigation without scripted, pre-defined drill-down paths, The Diver Solution offers both novice and experienced users an easy, intuitive interface, requiring no programming or advanced data manipulation skills.

Distilling large volumes of transactional data into useful information is imperative in today's challenging healthcare environment. Managers require that KPI's and other critical metrics are delivered and displayed in an easily understood, contextually appropriate manner. The emerging concept of information dashboards has made it practical to provide "at a glance" views of important information within the context of important trends and comparisons, such as trending over time and comparisons against budgets, forecasts, prior periods, and peer groups. This type of information lends itself to graphical representations.

Figure 4 - Fully customizable displays can combine tabular, chart, and text-based information for maximal impact.

The Diver Solution excels at presenting information intuitively; using graphs, indicators, and rich text as appropriate while preserving the ability to easily access deeper layers of detail if desired. Numerous built-in KPI's can be displayed, and users can also extend the application's functionality by customizing existing indicators or writing their own. Advanced users also have the means to develop custom calculations and formulas, while retaining the important benefit of always using current information, unlike spreadsheets that require manually refreshing.

The Diver Solution Delivers

Leading healthcare providers manage their respective organizations "by the numbers". Complying with increasingly arduous regulatory requirements, driving efficiency by identifying potential cost savings, and staying ahead of the competition by delivering stellar healthcare services all depend on high quality information derived from large volumes of data. The Diver Solution is the perfect business intelligence tool for transforming MEDITECH data into actionable information delivered in an intuitive, easily understand manner.

Appendix - Supported Systems and Data Formats

DI has a strong base of expertise integrating The Diver Solution with a broad spectrum of disparate data sources, a few of which are listed here:

3M Health Information Systems	MEDITECH
AS/400-based claim systems	MedSeries-4
API	Microsoft Access
CareFacts	Microsoft Excel
CareVision	Microsoft SQL Server
Cerner	OneStaff
Clinicomp	Oracle
DB2	PeopleSoft
Eclipsys	Per-Se Technologies
Epic	Picis
GEAC	Premier
Great Plains	Press-Ganey
IDX	QuadraMed
Informix	QDM Patient/Physician Satisfaction
InterSystems Cache	Siemens
Kaufman Hall	SoftMed
Kronos	Solucient
Luminex	Sybase
McKesson	TPA Feeds
MediCare ANSI 835	Visual Prime
MedInsight	Webhire