APOS Storage Center:
Proactive Healthcare Information Management for SAP BusinessObjects

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Introduction

The great drive in healthcare over the past decade has been to improve healthcare outcomes by rebuilding the healthcare system to be more evidence-based. To be evidence-based is to have a firm grasp on all of the different kinds of information that influence healthcare outcomes, and to act on that information. To improve care and make the system sustainable, we need to have in-depth information on customers, financial transactions, supply chain management, human resources, and IT resources. We need to integrate this information into a single comprehensive and coherent view to create actionable business intelligence (BI).

A well developed and well protected BI system lies at the core of most healthcare risk management strategies, and this need will continue to grow with the increasing demands on your data. Detailed analysis of the information in your BI system helps you to reduce clinical errors while streamlining administrative processes.

In 2001, the Institute of Medicine (IOM), an arm of the US National Academy of Sciences, released a report detailing the many failings of health care provision in the US, and laying out a plan to fix health care. The plan was to become more proactive and less reactive in engaging patients and families to manage their healthcare, improving the overall health of the population, improving the safety and reliability of the healthcare system, coordinating patient care amongst multiple agencies, delivering palliative services, eliminating abuse, maximizing access, and improving the healthcare system's information infrastructure. The implementation of the IOM's report has led to an explosion in healthcare-specific BI deployments.

"Information is power, and with power comes responsibility: if you gather healthcare information, you are obliged to be responsible for its handling and security, and for the privacy of your customers."

Information is power, and with power comes responsibility: if you gather healthcare information, you are obliged to be responsible for its handling and security, and for the privacy of your customers. Several pieces of legislation in the US delineate and enforce this responsibility. Risk management makes it imperative that you do everything in your power to meet the security, privacy, and audit requirements of such legislation.

APOS Storage Center automates the archive and restore functions in your **SAP BusinessObjects** deployment, helping you to manage the document lifecycle, safeguard data privacy, achieve regulatory compliance, and safely migrate documents of record between SAP BusinessObjects deployments. Online and offline storage capabilities let you balance disk space, performance and audit requirements. Selective restore lets you access information and supply it for audit purposes or patient request on a timely basis as required by law.

Background

In 2001, the Institute of Medicine (IOM), an arm of the US National Academy of Sciences, released *Crossing the Quality Chasm: A New Health System for the 21st Century*, a report detailing the many failings of health care provision in the US, and laying out a plan to fix health care. The report was not about who pays for health care, but about what quality of care patients should be able to expect from the US health care system:

> Americans should be able to count on receiving care that meets their needs and is based on the best scientific knowledge. Yet there is strong evidence that this frequently is not the case. Indeed, between the health care that we now have and the health care that we could have lies not just a gap, but a chasm. (1)

The growing complexity of health care "is characterized by more to know, more to do, more to manage, more to watch, and more people involved than ever before" (Report Summary).

The report summarized the challenge in these six imperatives:

- Reengineered care processes
- Effective use of information technologies
- Knowledge and skills management
- Development of effective teams
- Coordination of care across patient-conditions, services, sites of care over time
- Use of performance and outcome measurement for continuous quality improvement and accountability

It's clear from these imperatives that the coordination, delivery and application of information in health care grow ever more critical, not just to the cost of health care, but to its quality. It's little wonder that the decade following the report saw an explosion in the application of business intelligence to the health care industry.

The Healthcare BI Explosion

In a 2008 survey of 95 healthcare providers (see Figure 1), the Aberdeen Group determined that the factors driving BI adoption in healthcare were (in order of importance):

- Managing rising costs
- Improving medical outcomes
- Improving patient satisfaction
- Meeting regulatory compliance requirements
- Attracting and maintaining medical staff

The need to manage costs is obvious. What is less obvious is what the remaining drivers all have in common, which is *managing risk*. Risk can come in many forms, all presenting potential damage to your ability to manage costs. When you consider these BI drivers together with

IOM's quality imperatives, what becomes clear is that all of these drivers and imperatives are interdependent.

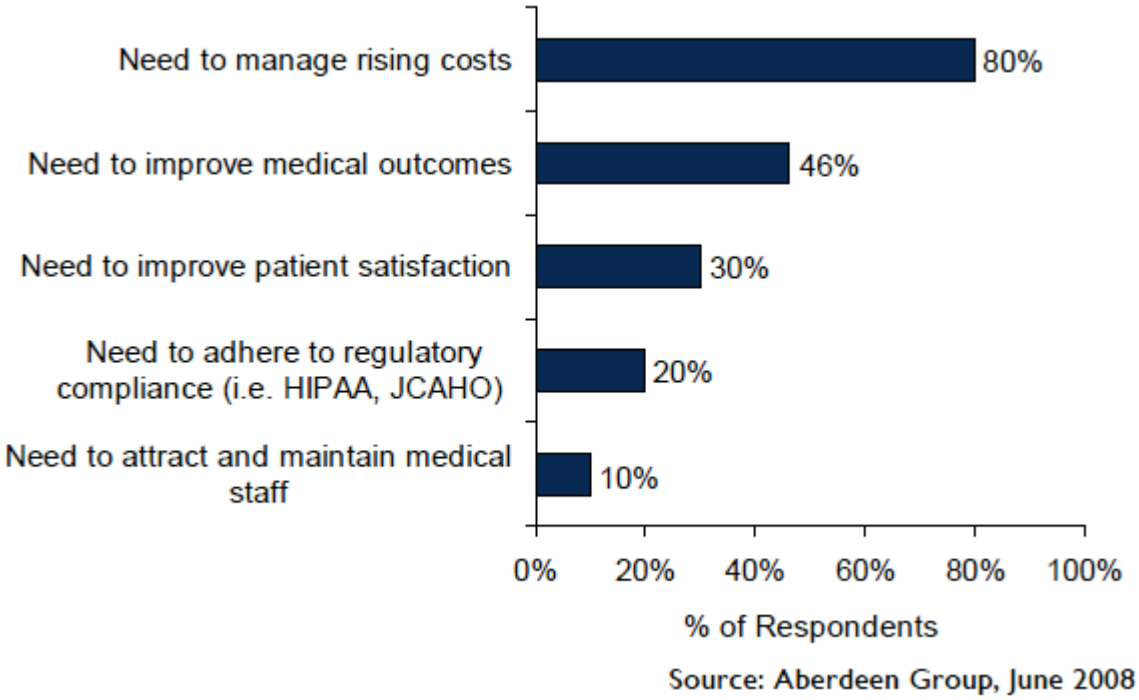

Figure 1: BI Drivers in Healthcare
Source: Aberdeen Group

Cost management, productivity, medical outcomes, compliance, growth in the complexity of processes, and growth in the quantity of data and data sources to manage mean that BI adoption, development, and continuous improvement are imperatives in their own right. The compounded risks inherent in failure are too great.

Before the advent of BI in healthcare, the industry was data-rich, but information poor. But now the provision of healthcare, with the help of BI, is becoming evidence-based. The empirical analysis of interrelated sets of data - clinical, operational, financial - allows providers and payers to manage in the present and plan for the future.

The Legislation

One of the IOM's objectives in developing the six imperatives was to improve the overall health of the population. To accomplish this objective, there has to be a degree of consistency amongst the diverse regions, providers and payers within the US. That's where legislation and regulation come in.

In "The State of Healthcare Business Intelligence," Laura Madsen describes the regulatory landscape for the healthcare industry:

> According to AHIP, in 2008 there were 18 agencies to which health insurance companies had to report. Each of these agencies requires a myriad of reports with their own deadlines and requisites… On the provider side, a client recently told me that his department was responsible for more than 1,200 reports that went out to different regulatory agencies. Those are just the reports that they have to complete to meet base requirements of these agencies, and things like reimbursements and accreditations are held hostage by each agency until requirements are met.

US legislation and not-for-profit accreditation in this field is vast and complex, but here are the highlights that BI platform managers need to understand.

1. The **Privacy Act of 1974** governs collection, maintenance, use and dissemination of personally identifiable information by government agencies.
2. The **Health Insurance Portability and Accountability Act** (HIPAA), enacted in 1996, has two major sections. Title 2 presents a number of standards for the use and dissemination of health care information, including:
   - **The Privacy Rule**, which regulates the use and disclosure of Protected Health Information (PHI), linked to an individual. A healthcare provider or payer must be able to disclose PHI to a requesting individual within 30 days, and they must disclose PHI when required to do so by law (for example, reporting suspected child abuse to state child welfare agencies.
   - **The Security Rule**, which deals with Electronic Protected Health Information (EPHI), defines the administrative, physical, and technical security safeguards required for compliance, and describes the information access policies and procedures needed for compliance. Data backup and disaster recovery plans are also required. Audits, both routine and event-base, play a key role in HIPAA compliance. Event-based audits usually concern security breaches.
3. The **Statements on Standards for Attestation Engagements** (SSAE 16), which replaces the earlier statement, SAS 70) provides guidance for service auditors reporting on controls at healthcare organizations, including the existence and effectiveness of technical policies controlling document integrity, which ensure that EPHI hasn't been altered or destroyed. Effective disaster recovery and offsite backup plans are key to ensuring patient health information can be recovered accurately and intact.
4. The **Financial Modernization (Gramm-Leach Bliley) Act of 1999** (GLBA) has provisions that govern the collection and disclosure of personal information, as well as opt-out provisions that give consumers some control over the sharing of such information.
5. The **USA PATRIOT Act of 2001** (Uniting and Strengthening America by Providing Appropriate Tools Required to Intercept and Obstruct Terrorism) reduced restrictions on access by law enforcement agencies to many kinds of communications and information, including medical and financial records.
6. **SOX,** the U.S. Public Company Accounting Reform and Investor Protection (Sarbanes-Oxley) Act of 2002, contains titles affecting auditor independence and qualification,

corporate responsibility, and financial disclosures - all of which are extremely important to healthcare payers.

It's a complex landscape. In no other industry is data such an important asset, and yet such a potential liability. As a BI platform manager in the healthcare industry, you need to be proactive about data governance.

Being Proactive with APOS Storage Center

Wikipedia calls data governance "an emerging discipline with an evolving definition." If there were ever a need to be proactive, it is in an emerging and evolving field, and being proactive about data governance means not waiting until you have a problem to have a solution in place. APOS Storage Center resolves SAP BusinessObjects document instance archive, backup and restore issues before they become security and regulatory compliance problems. If managing the document lifecycle, safeguarding data privacy, and achieving full regulatory compliance are on your agenda, then Storage Center should be on your radar.

APOS Storage Center provides the following critical capabilities for SAP BusinessObjects:

- **Rules-based backup, archive, versioning, selective restore -** Storage Center provides rules-based backup, archive, versioning and restore, letting you automate the backup process and restore selected documents of record to a location of your choice in order to facilitate auditor access, and at the same time limiting that access to the specific instances in question.
- **Offline and online archiving -** Storage Center enables both online and offline archive strategies. Online storage maintains documents of record within the SAP BusinessObjects system while hiding them from queries to improve processing. Offline storage maintains document of record integrity outside the SAP BusinessObjects system.
- **Extract and export -** Storage Center's extract and export features maintain document of record integrity for the migration process. The ability to export to other formats is crucial, because changes in the environment can make it impossible to restore the original document instance. Storage Center allowed administrators to restore the original, the exported version, or both.
- **Versioning, purging, retrieving Web Intelligence reports -** In organizations that make extensive use of Web Intelligence reports, the versioning provided by Storage Center is invaluable, because "Webi" reports can be changed easily by users. Storage Center provides an intelligent means to purge Webis while retaining retrievable versions, and enabling regulatory compliance
- **System performance improvements -** Storage Center limits the number of document instances the system has to search through archiving (either online or offline), improving response times.

Achieving Regulatory Compliance with Storage Center

The six IOM imperatives describe a path to improvement. They call for providers and payers to reengineer care processes, ensuring continuous quality improvement and accountability through performance monitoring. In essence, they are charged with:

1. Developing an effective BI infrastructure to make the best possible use of available technology as a means to manage both information and resources.
2. Making teams more effective and coordinating care by communicating the appropriate information to the appropriate resources at the appropriate time.
3. Developing the analytic capabilities to measure performance and outcomes.

There is a clear path to improvement in the IOM imperatives. However, the legislation is designed primarily to inhibit the flow of information for reasons of security and privacy. The two initiatives pull in opposite directions.

As of the Privacy Act of 1974, all government agencies had to safeguard personally identifiable information. Healthcare providers and payers were comparably restricted by HIPAA in 1996, with the added provisions that patients and auditors have rights to information access. SSAE 16 enforces the integrity, security and recoverability of documents of record created and stored by healthcare providers and payers. The USA PATRIOT Act throws national security into the mix, and SOX raises the ante on corporate responsibility.

The healthcare delivery imperatives, combined with the legislative imperatives, create a perfect storm for data governance. Here's how APOS Storage Center can help you weather that storm:

Privacy

HIPAA's Privacy Rule requires providers and payers to make Protected Health Information (PHI) to a requesting individual within 30 days, and also to authorities such as police when required by law. As a platform manager, you have to balance the need to keep years of information available on short notice against the need to maintain a responsive system that is not overloaded by simple queries.

Storage Center makes both online and offline archive strategies available to you. In online storage, the archived documents of record remain within your SAP BusinessObjects system, but are invisible to standard queries, saving processing power for the information that is of primary importance to your analysts. Offline storage moves archived documents of record to a separate location while maintaining their integrity in relation to your BI system, saving you both processing power and storage space.

Regardless of whether you archive online or offline, Storage Center lets you restore individual instances or groups of instances quickly and easily, either to their original location, or to a separate location for easy association with people and/or events.

Security

HIPAA's Security Rule defines the administrative, physical, and technical security safeguards required for compliance, and describes the information access policies and procedures needed for compliance.

SAP BusinessObjects provides all the security you need to comply with HIPAA's basic security requirements. However, the Security Rule also requires well defined data backup and disaster recovery plans. Storage Center should be a part of your backup and recovery plans, because it maintains the integrity of your documents of record, regardless of the integrity of the underlying data sources.

Audits

HIPAA's Security Rule outlines the audits necessary to ensure and enforce compliance, and SSAE 16 outline audit standards. You need to have policies, procedures and technology in alignment with these standards. The USA PATRIOT Act audit requirements can be invoked at any moment, and you need to be prepared for such an eventuality. The keys to compliance to all of these legislative requirements are document accessibility and document integrity.

Using Storage Center as an integral part of your backup and recovery policies and procedures will establish confidence in both the continued accessibility and integrity of your sensitive information.

Conclusion

Improving outcomes in the US healthcare system is an ongoing process that requires providers and payers to be less reactive in their approach and more proactive and evidence-based. To leverage the vast amounts of available data, to reduce clinical errors, to streamline administrative processes, and to manage risk effectively, providers and payers have had to implement business intelligence solutions and analytic strategies.

Collecting, maintaining, and disseminating healthcare information is subject to complex regulatory requirements, which require BI platform managers to take a proactive approach to risk management and disaster recovery.

APOS Storage Center complements the document lifecycle capabilities of SAP BusinessObjects, helping platform managers manage the document lifecycle, safeguard data privacy, and achieve regulatory compliance. Storage Center's selective restore capabilities make it possible to respond quickly and effectively to audit and customer requests without disruptions to your BI system.

About APOS Systems

Since its beginning in 1992, APOS Systems has evolved from a custom business application development shop to a global provider of solutions promoting well managed business intelligence. APOS solutions improve your return on your BI investment through:

- **BI Platform Management** -- automating and simplifying the administration, auditing and monitoring of your BI platform, providing robust document instance and object archive and restore capabilities, extending your ability to publish the right information to the right people at the right time, and enabling agile BI practices; and
- **Location Intelligence** -- full bi-directional integration between business intelligence and geospatial data, improving comprehension and communication, and enhancing decision-making workflows through advanced data visualization.

APOS solutions simplify, automate, complement, enhance and extend BI practices, and focus BI processes for greater agility in your organization's decision-making capabilities.