SAS® Business Analytics for IT Leaders

Drive evidence-based decisions across the enterprise through a single, agile and more effective information infrastructure
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Executive Summary

The issues facing IT organizations are varied, with many key deliverables being tied to providing the business with the information technology infrastructure and processes needed to drive effective decision making. Key drivers for IT leadership success include:

- Developing and promoting alignment between business units and information technology.
- Anticipating technology changes and initiating/developing an appropriate strategic response.
- Providing and maintaining key operational aspects of the information architecture and IT ecosystem while supporting innovation.
- Supporting business processes enabled by that architecture.

IT leaders, tasked to satisfy the needs of their own business units while satisfying the changing needs of all other business units, face a wide variety of challenges. This white paper identifies the key issues that must be addressed and provides a clear strategy for solving them.

Business Challenges

- Satisfying the need for speed in decision making – driven by evolving market structures, changing value chains and shifting business models.
- Driving business and IT alignment and meeting increasing business-unit demands for analytical solutions, applications and technologies.
- Evolving to flexible business analytics architectures that support new business applications and models.
- Responding to expanding regulatory demands.
- Increasing the efficiency of technology and integrating information into business decision-making processes.
- Improving business productivity and reducing costs.
Technology Challenges

- Developing and maintaining architectures that support the business process changes required for business analytics.

- Integrating emerging technologies that swallow up cycles, such as cloud computing, virtualization and in-database analytics.

- Providing the optimal array of analytical and reporting tools to support enterprisewide decision making.

New thinking and new models are required to move IT from a traditional project-based delivery model to a seamless process-based model for business decision making. This involves facilitating the sharing of techniques, technologies, people and processes.

There is rising demand for organizations to make fact-based analytically driven decisions. This need is fueling the thirst for integrated analytical data (structured and unstructured from both internal and external sources) for use within a robust analytical framework to deliver discovery-based analytics and operational analytical decision making.

All the while, IT leaders will be constrained by costs and must continue their efforts to drive information technology value.

Pressure Is Building, Change Is Happening

The heat is on IT leaders to:

- Adopt and operationalize business analytics technologies, methods and processes while maintaining costs.

- Provide business users with greater personal control over the discovery process from data to results within a managed and secure framework.

- Meet the needs of business users without disrupting:
  
  - The ability of business users to discover new insights.
  
  - Operational effectiveness.
  
  - The performance of critical systems’ infrastructures and business processes.

Business users are being asked to optimize business operations from fraud detection to customer segmentation and solve complex business issues using a full range of analytical methods from simple to sophisticated. This drives one of two outcomes:
either increased pressure on IT to provide a robust business analytics framework or the continued development of individual business-unit data centers based on departmental or individual standards that are disconnected from operational deployment options – adding to the costs and eroding value.

With pressure to manage IT operations and budgets, the question is how and what do you have to do to enable a new generation of business analytics applications, tools and processes? How do you enable enterprise analytics without stifling innovation and overinvesting in multiple point solutions?

For IT leaders, enabling better decision making through business analytics requires a new model, new ways of thinking and new ways of looking at business systems.

**Figure 1: A change in focus is necessary to meet business requirements for innovation.**

In the move toward enterprisewide business analytics frameworks, there is potential for misuse or abuse of applications and systems by savvy users at the expense of performance excellence for operational analytical solutions and more discovery-based activities.

Line-of-business demand for business analytics has spawned the emerging and urgent need to build a business analytics framework with appropriate operational and discovery environments. SAS® Business Analytics – delivered through a single, flexible framework – provides IT leaders with the solutions, technology and services to leverage the value of business analytics across every line of business while safeguarding the performance excellence of operational systems.

Read on to learn more about SAS’ measured, scalable approach for helping IT deliver value across the enterprise.
Beyond Operational to Discovery

The business analytics landscape can be thought of in two parts: operational and discovery. Both are highly valuable to the organization, and are spawned from the spillover of business analytics applications and methods into multiple business disciplines.

Operational

A key business imperative is to ensure operational applications and critical business systems are running. Business analytics overlaps with the operational aspects of IT. Operational decision-making systems deliver effective automation of decision criteria. These systems are primarily focused on the automation process – embedding decisions or business processes into systems to streamline operations and reduce human error. These decisions are critical.

Operational deployments of business analytics outcomes often are built on a series of business rules created by business analysts or business systems and implemented to improve operational efficiency. Operational deployments take defined business rules and implement them for operational purposes. Examples range from the processing of customer statements to the creation of an outbound marketing offer for a telecommunications company. The underlying need for operational business analytics is based on the desire of the business to make more fact-based decisions faster and is critical to business continuity.

Operational business analytics reflect the deployment options for key business decisions created during the discovery process (see below). Options include deployment of business analytics in-database, in real time, within a human channel such as a reporting infrastructure or within a business activity monitoring scenario.

Discovery

The discovery process is largely an unknown for IT. While operational structures are built based on a series of rules, the discovery process revolves around unstructured problem solving. This requires IT leaders to bridge the functional service provided for operational processes to enable the business to leapfrog the competition via the discovery process. This process is made up of a number of cycles as depicted in Figure 2. Operational business analytics are highly dependent on the discovery process – a process that is iterative in nature, unstructured but following a strong methodology to enhance business value.

Analysts work through the process of defining a complex business issue that needs to be resolved: the observe and measure phase. The test and learn phase continues with multiple cycles of experimentation, model development validation and testing. The final phase is moving these new insights into an operational environment and collaboratively deploying results to both workers and systems as needed.

Characteristics of operational systems
- High availability.
- High performance.
- High value.
- Speed and repetitiveness.
- Based on decision criteria developed through the discovery process.

Characteristics of discovery-based business analytics environments
- Loosely managed analytical environments.
- Focused on development, investigation and insight.
- Centralized and managed data storage.
- Analytically based data management.
- High value.
Figure 2: Discovery is a continuous process involving interconnected cycles that support unstructured problem solving.

For IT, business analytics-based data management is the immediate challenge to answering these questions. How do you bring all of this information together in a timely manner while ensuring data quality? Data management is a process designed to manage the acquisition, integration, improvement and control of enterprise information. This process takes into account that there are many people in many roles, as well as hundreds or thousands of processes, that depend on the data.

Because data affects decision making and strategy at all levels of the enterprise, data management crosses both IT and business and creates a bridge between the two. It is clear that new decisions, analyses and quantitatively based rules must be surfaced more readily within other corporate technologies. A properly constructed business analytics environment does just that – bringing operational and discovery together.

Figure 3: A key challenge for IT is continuous support of operational decisions while enabling transformational decisions via the discovery process.
Elements of a Business Analytics Framework for IT

Moving beyond operational mode to discovery mode requires the ability to support the various styles of decision making that are used throughout the enterprise.

Figure 4: Achieving the discovery mode requires support for a variety of decision-making styles.

Ad Hoc Decision Making and Classic Business Intelligence

Any business analytics environment contains elements that today would be considered normal for most business intelligence (BI) applications. The classic BI environment has operational elements, including applications that implement business processes and their associated databases. The data warehouse often acts as the interface between the operational world and the BI world.

Data warehouse data is usually not structured to support a wide range of analytical and reporting applications. It is often necessary to create managed data marts tailored to specific business analytics applications such as anti-money laundering, fraud detection or social network analysis. It is important to note that these are not simply random extracts from the data warehouse but are created and maintained by well-defined IT processes.

The classic BI approach does not address the full range of business needs that can be met through business analytics.
Exploratory and Transformational Decision Making

A key differentiating requirement of business analytics environments is the ability to move beyond reactive, BI-based ad hoc decisions to proactive exploration, which leads to transformational decisions. By using more advanced quantitative methods, business analysts can challenge fundamental business models and evolve them into new models that support top-line organizational growth.

Automated and Real-Time Decisions

Business analytics stretches beyond the simple ad hoc decision process by providing the key input to and a seamless mechanism for feeding results back into operational processes. Automation is suitable for cyclically running processes, such as planning, but not for applications that enable decisions to be made on the fly, with intelligence, in response to an external event (such as the swipe of a credit card or the arrival of a phone call). In such cases, the operational process will need to “call out” for help.

As a result of this call, the scoring or recommendation engine needs to execute very quickly and return a result in the form of a recommendation, such as a go/no-go decision for a transaction that may be fraudulent or a “next offer” suggestion based on a customer rating. Together, these styles of decision making require a business analytics framework that provides:

- Packaged operational analytical applications, such as real-time fraud detection and marketing solutions.
- A robust platform for business analytics that supplies core infrastructure services.

To effectively deliver business analytics, IT groups will need to rebuild for the future.

Figure 5: The logical business analytics processes (a SAS Best Practice Blueprint).
Why Business Analytics? Why Now?

So why has your business not demanded something different before now? Many business units have spent years, even decades, eluding IT and claiming that IT doesn’t understand the need for discovery. They point to data structures that do not support the way business units work and systems that do not provide the flexibility needed to explore, transform and discover.

Business analytics provide a clear path for moving beyond the operational to empower true discovery – with speed and agility.

We need more data! We need new analytical applications! We need better analytical tools! We need better data! We need better systems! We’ve got too many silos! We’re duplicating our efforts! Unending demands on IT leaders demand that things change ... but how?

Here are four reasons why you, as the change agent, should care about business analytics.

1. **You can reduce costly duplication.** Your organization is already applying business analytics – here, there, everywhere – and the costs are already there as well, but hidden.

2. **You can give decision makers greater freedom without relinquishing governance.** Better business decision making requires freedom and control:
   - Freedom to explore, including the ability to create new flexible data structures based on internal and external data sources, drive decisions using ledger-based and nonledger-based information, and combine structured and unstructured data.
   - Control of your technology infrastructure, including security, metadata, storage, hardware, training and where processes are run.

3. **You can align business and IT by providing a single, managed way for multiple business units to solve business problems.** The demarcation between owners of information assets is breaking down. Finance requires risk-adjusted data. Marketing needs to know who not to market to, so it may need to incorporate fraud scores into its propensity modeling process. R&D needs access to, and a way to interpret, unstructured data from social media conversations about products and competitive developments.

4. **You can provide packaged analytical applications and industry-based applications that deliver answers to today’s issues with the flexibility to answer tomorrow’s questions.** Lines of business are demanding access to more capabilities for analytically driven decisions. The new science of decision making is highly dependent on business analytics technology for success.
A Few Ideas to Consider Before You Get Started

1. Work with the business units to review current processes and the issues being faced in order to support discovery-based analytics.

2. Develop a target state architecture for your enterprise-wide business analytics implementation.

3. Execute against a roadmap to deliver your targeted state architecture.

4. Be a key sponsor and participant in an analytical center of excellence.

5. Review business analytics needs and delivery capabilities often with the business units to stay ahead of their changing needs and remain responsive.

For more ideas on getting started with your business analytics implementation, read “8 business analytics essentials” at www.sas.com/news/sascom/2010q2/column_businessanalytics.html.

The SAS Business Analytics Framework Can Help

The SAS Business Analytics Framework provides IT leaders with a clear path for resolving issues – from the simple to the incredibly complex – through a measured and scalable approach to delivering value. This framework for decision making incorporates the skills, analytical applications and technologies, as well as the underlying quantitative methods, that are required to:

- Solve complex business problems.
- Manage for performance.
- Drive sustainable growth through innovation.
- Manage and reduce risk.
- Anticipate and embrace change.

In today’s competitive global economy, every problem has an opportunity attached. Through effective use of technology, IT organizations empower decision makers to seize those opportunities. However, the increasing complexity of business problems requires a move beyond traditional operational decisions (based on rules developed by the business) to discovery-driven decisions that result in transformations that can shift business performance markedly.

Finding the right technology framework to advance your business and enable innovation can be difficult. But it is even more difficult to try to build and implement such a framework on your own. The SAS Business Analytics Framework provides a centralized, coherent and manageable environment to support the critical business functions of the enterprise and enable innovation – while maintaining IT leadership and governance, reducing costs and gaining maximum return from your existing technology investments.
Data Integration

A major obstacle for empowering decision making is the sheer volume of data flowing in from every business process. This is compounded by the mass of unstructured data (phone calls, e-mails, surveys, video, etc.), leaving a tangled mass of hidden truths. The SAS Business Analytics Framework is anchored by a comprehensive data management environment that addresses the full spectrum of data management needs – from data integration to data quality to master data management – for everything from small tactical projects to enterprise-wide strategic business initiatives. SAS software’s capabilities in data and text mining help identify patterns within, and interpret, the abundance of data. Multilingual natural language processing technologies add the ability to combine structured and unstructured data.

Analytics

Empowering discovery-based decisions requires not only quality data, but the ability to transform that data into predictive insights. SAS Analytics include the widest range of techniques and processes to help individuals and lines of business collect, classify, analyze and interpret data. In addition to tools for standard and ad hoc reports, query drill-down and alerts – capabilities that help define what happened in the past – SAS provides predictive analytics to answer more complex questions and drive proactive decisions. SAS reveals patterns, anomalies, key variables and relationships that lead to new insights and better answers faster. A range of client interfaces allows even nontechnical users to create sophisticated analyses.
Reporting

The results of these analyses, and ensuing discoveries, can be shared across the organization through open integration with SAS reporting. With SAS, reporting is not a standalone activity, but part of a seamless approach for creating and sharing intelligence.

Role-based interfaces help make users more self-sufficient, and alerts and embedded analytics in reporting applications enable right-time decision making. SAS empowers IT to rationalize the myriad of query, reporting and business intelligence tools and still meet the individual needs of each department – without adding burdens to IT resources.

SAS® Business Solutions

Business solutions are at the top of the SAS Business Analytics Framework because they are a logical progression of using technology to find answers to business challenges. Every SAS business solution incorporates the combined strengths of SAS software, professional services, training and ongoing support.

Line-of-business solutions address goals that affect every organization, such as achieving greater return on investment from customer relationships, optimizing the supply chain, measuring and managing risk, and driving effective human capital strategies.

SAS industry solutions build on our industry domain expertise by discovering useful information in a context relevant to specific industry processes. Examples include anti-money laundering in financial services, getting drugs to market faster in pharmaceuticals, identifying cross-sell opportunities in retail, assessing policyholder risks in insurance and demand-driven forecasting in manufacturing.

Aligned with the Expanding Role of IT

The core elements of the SAS Business Analytics Framework – including our business solutions and their technological underpinnings – align with the expanding role and changing needs of IT organizations. From a strategic perspective, this agile framework grows over time to support performance objectives and changing market dynamics. SAS delivers results in months – not years. Organizations can start with the capabilities they need right now, and then add new functionality over time. As capabilities are added, the benefits continue to multiply while total cost of ownership is reduced.
Conclusion: Solve It Today, Evolve It Tomorrow

No matter where your organization is on the path toward evolving your IT infrastructure to meet long-term business analytics needs, SAS can adapt to your situation. We can help drive your enterprise intelligence to the next level, while leveraging and extending the value of your existing IT investments. SAS enables IT to effectively manage information with lower risk and shorter time to delivery by allowing you to tap into only the SAS capabilities you need, when you need them.

Collaborative data integration. Imagine giving users across your organization the ability to access and process all the data they need, no matter where it resides or in what format. SAS improves data integrity at the source by embedding automated quality processes that consolidate, cleanse and standardize data directly in your operational environments. A collaborative environment with a common set of tools promotes reuse and sharing to achieve faster results and lower costs. It enables you to deliver consistent, trusted and verifiable information across systems.

Unmatched analytics. SAS offers an integrated suite of software for statistical data analysis, data and text mining, forecasting, econometrics, quality improvement and optimization. Compared to analyzing historical information and using gut instincts, the ability to predict gives organizations a competitive advantage, lowers risk and provides the insights needed to plan for the future.

Reporting in more places. With SAS you can make information consumers across your organization more self-sufficient through simple, role-based interfaces. Enable right-time decision making through alerts and embedded analytics in reporting applications and business processes. Deploy reporting across the organization without further burdening IT resources.

Integrated capabilities with common metadata. Data integration, analytics and reporting are achieved through a robust environment that can be shared across departments, without the cost and complexity of cobbling together a multivendor solution. With SAS, information can be centrally managed and leveraged across the entire organization at a lower cost of ownership. This enables decision makers and departments to access and share consistent and reliable information.

Industry and line-of-business solutions. Take advantage of packaged applications built on the platform for SAS Business Analytics. These solutions are tightly coupled with industry domain expertise and data models tuned to the specific business and information technology processes used in each industry or business function area. Solve critical business issues and achieve objectives more quickly with less risk and at a lower cost.
About SAS

SAS is the leader in business analytics software and services, and the largest independent vendor in the business intelligence market. Through innovative solutions delivered within an integrated framework, SAS helps customers at more than 45,000 sites improve performance and deliver value by making better decisions faster. Since 1976 SAS has been giving customers around the world THE POWER TO KNOW®.