

# **Accelerating Analytics Success With On Demand**



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## EXECUTIVE SUMMARY

Information technology departments are struggling to keep up with the administration and maintenance activities required to support traditional, on-premise enterprise applications. The time, expense and resources required to merely maintain the status quo is stifling CIOs' abilities to deliver innovation to the lines of business.

The rapid externalization of business through the Internet, increasing volumes of data and a convergence of operational processing with business intelligence (BI) are causing fundamental changes in business operations that demand rapid innovation, but the resources and budgets needed to provide it are scarce. When they are funded, BI initiatives tend to be IT-centric, ultimately coming up short on functionality, usability and flexibility.

An on-demand, or software-as-a-service (SaaS) platform allows IT organizations to maximize innovation and output with their BI opportunities, while lowering downside IT burdens, in four key aspects:

- 1) The on-demand model minimizes IT resource allocation of hardware and software administration which allows for a high degree of focus on delivering end-user functional requirements versus building, tuning and supporting infrastructure.
- 2) The rapid deployment of on-demand solutions builds momentum during critical early stages of adoption.
- 3) The network-based architecture of on-demand technology facilitates integration of multiple data sources and analytic tools.
- 4) The security and privilege management of on-demand delivery are well matched to the broad spectrum of roles, from data provider to strategic analyst, that a comprehensive BI effort entails.

Past approaches to BI implementations reflect two generations of legacy computing: the massive data silos of first-generation enterprise IT, and the ad hoc and isolated personal data collections and idiosyncratic tools of second-generation personal computing.

The emerging models that *should* guide the next generation of business applications are those of ubiquitous access to timely information from multiple sources, and device-neutral delivery of personally tailored presentations based on the conventions of the Web.

## THE CORE CASE FOR ANALYTICS ON-DEMAND

There is growing consensus that competing on analytics is a strategic priority for every enterprise. Traditional means of competitive differentiation, ranging from simple geography to sophisticated practices of product and service innovation, are losing effectiveness as barriers to competitor entry and protectors of profit margins.

Accumulated knowledge of past customer behavior, insightful analysis of customer relationships over time and across multiple product lines, and leverage gained from extended relationships are the least readily duplicated tools of competition. Management analytics are thus not merely informative, but crucial to sustained market segment leadership.

It is therefore perverse to find that up to 75% of the IT budget in FORTUNE 500 companies<sup>1</sup> is currently allocated to maintenance, not innovation, and that this percentage continues to grow. Existing IT portfolios are so diverse in terms of provenance, technology and function that even small enhancements or fixes require three to four times as much effort to just locate and map out their impact as to actually develop and test them.<sup>2</sup>

A portfolio of on-premise software applications may look like an asset whose costs are in the past while its benefits continue; a more penetrating analysis may find that such a portfolio is actually a resource sink, draining funding and talent that would better be applied to BI innovation.

Management guru Tom Davenport<sup>3</sup> has argued that many business processes are so similar across organizations that their commoditization and outsourcing is inevitable. Rather than the one-to-one contractual arrangements of business process outsourcing (BPO), the one-to-many alternative of on-demand delivery is gaining ground.

On-demand practice spreads the costs of maintaining IT platform coherence across multiple users, while preserving confidentiality of data and customization of application function by using multi-tenant database platforms and metadata-based application development tools.

The fastest-growing but least productive IT costs—including security, user support, and compliance with an expanding slate of governance mandates—are dramatically mitigated by on-demand delivery, freeing the time of key people and the resources of downsized technology budgets for strategic projects.

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<sup>1</sup> Forrester

<sup>2</sup> *Ibid.*

<sup>3</sup> Thomas H. Davenport, "The Coming Commoditization of Processes," *Harvard Business Review*, June, 2005

## **THE STATE OF BUSINESS INTELLIGENCE**

From its earliest days, BI as an industry has had to struggle with the mere housekeeping of data integration as a prerequisite to more valuable analytic integration.

Originally conceived in terms of self-service information access for creative brainstorming by knowledge workers, BI in too many cases winds up being a one-size-fits-all proposition that merely reincarnates the management information system (MIS) of decades past. The knowledge workers who could most benefit from analytics are relegated to roles as information consumers rather than active participants.

With centralized IT staff kept “in the loop” of what were originally conceived as user-driven systems, BI applications and implementations wind up consuming IT resources at unacceptable levels for continuing tasks of development, enhancement and maintenance—even while the value of those applications is hamstrung.

Despite broad recognition of this situation, BI tools in particular (and enterprise software in general) are typically purchased under inflexible licensing arrangements that discourage consideration of alternatives once a BI provider is entrenched in the IT shop.

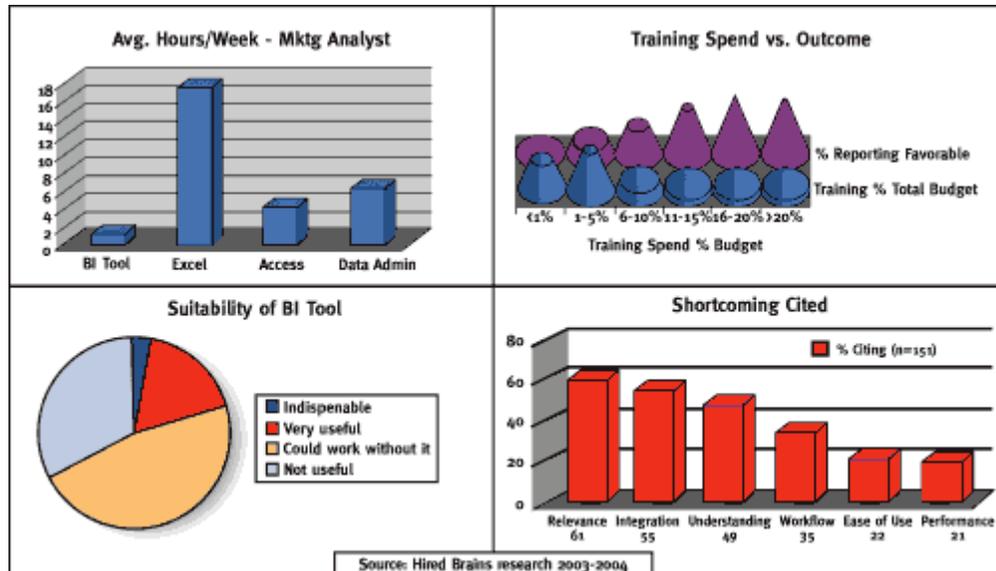
Various analysts have offered surprisingly diverse explanations of disappointing returns on enterprise BI investments. “The biggest barrier to BI deployment is a lack of user skills and knowledge of best practices”, according to research presented by Stamford, Conn.-based Gartner Inc.<sup>4</sup> But research by Hired Brains<sup>5</sup> reveals a very different perspective by those who use BI. Whether it is the software itself, or its implementation, a majority of people surveyed cited lack of relevance, lack of understanding and poor integration with workflow as the major drawbacks.

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<sup>4</sup> “BI Spending Up, Skills Down, Gartner Says,” *SearchCRM.com*, 16 Mar 2005:  
[http://searchcrm.techtarget.com/originalContent/0,289142,sid11\\_gci1068280,00.html](http://searchcrm.techtarget.com/originalContent/0,289142,sid11_gci1068280,00.html)

<sup>5</sup> Neil Raden, “Dashboarding Ourselves,” *Intelligent Enterprise Magazine*, May 15, 2004

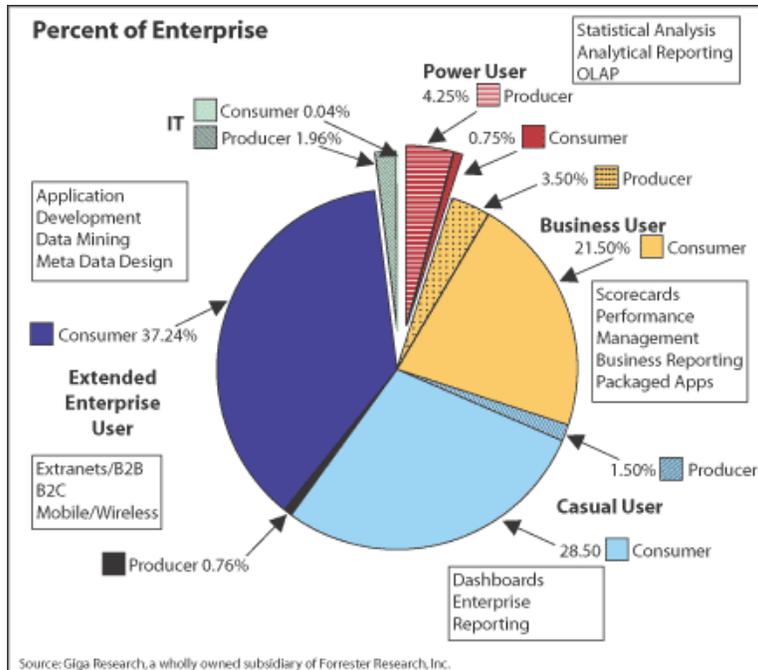
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BI vendors try to sell more “seats” by adding new functionality and an ongoing effort to promote “ease of use” with each release, but it is not clear that more functionality is really what is needed. Perceived relevance and effective understanding may best be improved by simplifying tasks, minimizing handoffs of data from one tool or organization to another, streamlining the user interface, and presenting only the functionality needed at any given time. Tools with intrinsically network-based architecture foster integration with workflow.

The emphasis of analytics is changing from one of long-range planning, based on historical data, to dynamic and adaptive response based on timely information from multiple contexts. Analytics should therefore permeate every aspect of an organization’s operations, rather than being built for an ecosystem with a handful of “power users” and a wide audience of report requestors – but the latter is precisely the picture that’s offered by data compiled by Giga/Forrester.

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The technology of BI is often quite ingenious, but its potential is frustrated without an improved understanding of the roles that people play in organizations. BI fails to produce competitive advantage when it is delivered in off-target deployments that never quite fit into the flow of everyday work.

Leading enterprise software vendors, including BI vendors, have attacked the form but not the substance of these problems: they have migrated many of their products to thin-client versions in an effort to deliver a more ubiquitous solution, but these redesigns are often mere “Webtops” with former desktop functionality relocated to a nearby server. These offerings are not, for the most part, re-architected as true Web applications with networking protocols fully integrated into their design.

Some leading vendors are beginning to deliver true Web applications. Buyers are well advised, though, to examine these offerings for signs of being intentionally limited in capability so as not to undermine the profits from an existing product portfolio.

### **WHAT IS “ON DEMAND”?**

Formerly trendy labels such as “hosted application,” “application service provider” (ASP), and even the fairly recent “software-as-a-service” (SaaS) are widely regarded as either yesterday’s news or tomorrow’s ungovernable mess. “On demand” is the most favored label *du jour* for the next generation of application delivery, but use of that label often lacks precision.

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It's useful to define these various labels as follows:

**SaaS:** Characterized by application(s) hosted remotely, accessed through a network (typically the public Internet), with maintenance and management of the application from a central location; most importantly, a one-to-many delivery model, meaning a design to support more than one customer from a single instance of an application stack.

Note: The word "service" indicates a provider business model, possibly but not necessarily using Web services protocols.

**Hosted Applications and ASP:** These arrangements have the logical architecture of an on-premise solution, but the physical location of application and data elsewhere. The same direct licensing (vendor-client) is in place; the nature and degree of customization, support, software patches and the like are comparable those of on-premise software but typically performed by hosting service personnel.

**On-Demand:** This is the form of SaaS that is the most interesting and most promising for analytics. Licensing is often per person, per time period (monthly or annually). Commitments can vary, but new users can often be added without negotiation or paperwork. Signup can be instantaneous.

The logical connections between various on-demand components in a supported architecture, like salesforce.com's on-demand platform, may use open standards such SOAP, UDDI and WSDL; metadata-based customization mechanisms allow administrators' modifications to migrate easily from one release of the platform to the next.

**Mash Up:** This colloquial term refers to combining content from a number of Web services into a single presentation. Having Google Maps pop up to display a picture of an address when clicked is an example.

The opportunity for best-of-breed analytics to be easily selected and "mashed-up" in a single interface represents an attractive integration opportunity for BI. The term "mashboard" has also been used to describe the use of this approach in a BI context.

## ***REQUIREMENTS OF ON-DEMAND***

A proper on-demand environment can only function if its design adequately incorporates scalability, multi-tenant concurrency and configurability:

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**Scalability:** In order to provide maximum performance and price competitiveness, an on-demand environment must be built to scale without discontinuous interruptions in service or underlying costs. To achieve this, it is crucial to maximize concurrency and the efficient use of all of the application resources—including, for example, Web and application servers, network connections, caching, database management and instance tuning.

**Multi-tenant Concurrency:** Many clients share the same single instance of an application, providing an economy of scale not possible with on-premise software, but it is absolutely crucial that these resources can be shared without different customers' data or processing getting entangled. Less essential, but highly desirable, is sufficient peak-load capability to prevent one customer's busy times from being apparent as reductions of others' application performance.

In addition, the multi-tenant flavor of on demand simplifies integration by presenting consistent APIs. For example, the fact that all customers of an on-demand platform are on the exact same version, complementary software vendors can build their platform integration once and make it available to other customers through an on-demand marketplace with the click of a button.

**Configurability:** Both scalability and multi-tenancy are more readily achieved when metadata configures application appearance and behavior for each group of users. This avoids the costly and brittle customization of each of several instances of the application or its stack.

Providing on-demand applications (services) behind the firewall is also possible, but it makes more sense to reserve this effort to those services that are truly unique to an organization. Analytics tools do not derive their uniqueness from functionality, but from the manner in which they are assembled and deployed--preferably by stakeholders who understand their business and task domain, rather than by IT operators or general-purpose development teams.

A key factor in the transformation of knowledge to value is creativity. An analytics mash up allows for freeing up the creativity factor without losing the useful feedback of one's peers.

## REQUIREMENTS FOR ON-DEMAND ANALYTICS

A new way of implementing analytics gains much of its value by paving the way for improvement of the analytical tools themselves. Here are some suggestions of qualities to evaluate when considering options:

### ***ON-DEMAND HOST***

- **Open Platform** Fast and easy creation of composite analytical applications, reports and dashboards by stakeholders, not IT, is the goal.
- **Best-of-Breed Partners** An on-demand host can only achieve and maintain competitive parity by providing the best tools available: fortunately, the extensibility and rapid time-to-market of on-demand development and deployment make this a likely prospect.
- **Multi-Tenant Architecture** Multi-tenancy is nearly synonymous with on-demand, but a platform provider cannot just provide it--it has to excel at it. Concurrency, performance, security, reliability and scalability take time to master. Data loads can be unpredictable and bursty: the platform provider has to have excellent skills and methods for load balancing, caching, tuning as well as other high-performance computing capabilities.
- **Diverse Customer Base** The provider has to be able to service the needs of the largest and the smallest businesses and organizations. Developing a sufficiently large base to provide both diversity and concentration of usage types helps the community grow while adding to intellectual content through the diversity of the members.
- **High Adoption** Adoption rate is a more of a result than a requirement. If the on-demand model provides a more fertile environment for analytics than current offerings, then adoption rates should be much higher as a consequence. In addition, very nearly by definition, there is no shelfware: participation can be easily monitored and measured in an on-demand environment.
- **Metadata Customization** Eliminating customization design and development, and its subsequent support, is a major cost-cutter for IT. The on-demand model should be challenged when it is claimed by software providers who lack sufficient abstraction and customization through the use metadata by their applications. Otherwise, on-demand customers will eventually be disappointed when service can't be promptly and affordably tailored to their needs.

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- **Mash Ups** Not confined to on-demand, but increasingly expected of Web 2.0 offerings in general, the straightforward flow and combination of content among multiple Web applications is a powerful way to add value to analytical tool sets without costly developer support.

## ***THE PERIL OF PARTIAL SOLUTIONS***

Providers claiming to offer on-demand solutions should have those offerings closely scrutinized. Putting “On-Demand” in a brochure does not mean that the technology satisfies on-demand criteria as outlined above.

There will be urgency on the part of some vendors to put an on-demand offering into the go-to-market portfolio, but caveats abound.

- **Desktop Solutions** Porting a desktop application by removing its user interface and replacing it with a Web front-end masks the fact that its internal operations have not been migrated to an on-demand, multi-tenant architecture. The result is likely to perform poorly, to require time-consuming labor for upgrades and patches, and quite possibly to be discontinued when the vendor releases its “real” on-demand product at some point in the future, likely with no satisfactory conversion path.
- **Limited Customization** A true on-demand application operates in layers and is wrapped by an abstraction layer (metadata) that allows for sufficient customization of the application for each customer without requiring modification or extension to the executable code. To do otherwise would limit the ability of the provider to provide seamless upgrades and to gain economies of scale from multi-tenant concurrency.
- **One-Stop Shop** Providers that attempt to migrate their BI standardization approach to the on-demand architecture potentially defeat the purpose by limiting choice and the selection (and easy integration) of best-of-breed components.
- **Limited Data Integration** When data integration is offered on a batch-only basis, like the black-box approach common in hosted applications (transfer your data and it will get loaded - eventually), the real-time, on-demand aspect is cut off.
- **Limited functionality** Many vendors will be tempted to offer feature-subset or otherwise limited versions of their legacy software so as not to upset the base. This strategy has been seen before, years ago on PCs and more recently in Web-based front-ends. It will happen again; the

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results will be the same. Some customers will find adequate utility in these offerings, while others will either wait for more robust tools or look elsewhere.

Vendors offering new products for the first time will be subject to the same scrutiny as in any other environment. Does the product work as planned? Is the vendor reliable and viable? How long until the feature set rounds out to be useful?

## PLATFORM STANDARDIZATION: THE OPPOSITE OF ON-DEMAND?

There is a move in the BI industry today to encourage customer adoption of a unified enterprise platform: nearly the conceptual opposite of an on-demand model. When alternatives are so fundamentally opposed, it is worthwhile to understand the motivations and the details.

Business intelligence tools, even before the term BI was coined, were often a controversial subject within IT shops. The major complaint of IT operators was that unpredictable *ad hoc* analytics usage could degrade the performance of operational systems (when there was just one mainframe).

As the BI processing workload moved to decentralized architectures, requests for access to centralized stores of operational data became an issue: satisfying those data requests diverted processing cycles from over-taxed applications and clogged scarce network bandwidth.

Today, those issues are greatly mitigated, at least in terms of absolute measures of system and network capacity--but IT has new reservations about security, governance and the proliferation of BI environments with multiple vendors with the attendant issues of staggered upgrades, patches and support.

Typical BI environments today take a “best-of-breed” approach to integrate BI components -- data integration, reporting, query generation, analysis and dashboards, for example. It is an attractive proposition, but also costly and risky. IT has a difficult time putting the pieces together and an even more challenging time keeping them together.

The interfaces between proprietary software components are often incomplete; the constant churn in functionality, platforms, standards and versions diverts energy from productive work.

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BI vendors, and this includes enterprise software vendors with BI components such as SAP and Oracle, sense an opportunity in this concern within the IT component of their client base: they respond by promoting a platform “standardization” or “rationalization” program. The idea is to encourage their clients to consolidate all BI activity under one umbrella. The BI “suite,” a sort of soup-to-nuts set of functionality, is the result.

Motivation for this move to BI unification rarely comes from the user community. IT is the catalyst in driving this decision, and some larger organizations are beginning to move in that direction.

The question is, however, will this ramp up BI use and effectiveness among those who rely on information to do their work? Or will it fuel a renewed focus on infrastructure and technical (IT) issues and distract people from what’s really important: understanding, decision making and data-driven action?

In those cases where standardization takes hold, what is the longer term outlook? What if the selected vendor falls behind and fails to innovate? Will the BI platform approach create so much inertia at rest that an organization will find switching at some point in the future too painful to bear?

Does it make sense to be saddled with a decision made years earlier, largely on “plumbing,” maintenance and infrastructure issues, as opposed to moving in directions that are guided by relevance and usefulness?

What seems to be driving BI standardization decisions are a small number of key assumptions: preconceptions that fail to recognize progress made with on-demand software as a viable platform for high-value enterprise services.

1. **Belief:** BI suites are offered by a handful of large, trusted software vendors whose product quality and financial stability can be judged based on the experience of a large user base. On demand opens the door to a raft of different software services and vendors with shorter track records and more uncertain quality and staying power.

**Reality:** Offsetting this concern are the trust metrics that are an integral part of the Consumer Web ethos that on-demand software should reflect. Buyers review and rate sellers. In an on-demand community, consumers of services rate their suppliers continuously.

This tends to not only weed out the weak offerings, but to also provide a positive incentive to all of the participants to improve their offerings by relying more on the quality of their product and less on the skill of their sales force.

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- 2. Belief:** Everyone using the same set of tools from the same vendor insures standardization of assumptions and provides a “single version of the truth.”

**Reality:** Then again, everyone has Microsoft® Excel: it provides a common platform for mistakes.

Driving commonality is a management issue, not a software issue. Most organizations are far-sighted enough to see that “the books” are only one point of view, and that the power of seeing things in context is what drives great organizations.

- 3. Belief:** The platform standardization approach increases the effectiveness of BI by concentrating development and training efforts on a single track.

**Reality:** A better solution is to allow people working in *ad hoc* groups to find their own solutions, to encourage and support each other, and to establish their own best practices.

The extent of analytics in “shadow systems”<sup>6</sup> in organizations is a clear indicator that there are many analytical gaps not filled by current BI efforts. The on-demand model allows an organization to find a more tailored fit for different constituents.

The need for commonality in definition and use of key elements such as metrics, models and KPI’s is often thought to be best met with a single, standard BI platform—but if common metrics are so vital, that’s a poor argument for burying them in a proprietary BI tool’s code and/or metadata. Those metrics should be documented, codified even, in higher level abstractions that can be shared by multiple applications, even beyond BI applications.

BI vendors have done little to open up their metadata: even in those cases where they have, it is typically only understandable by their own proprietary engines.

- 4. Belief:** Using various vendors increases the training burden and decreases the portion of people who participate in BI.

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<sup>6</sup> For a detailed description of the Shadow IT problem in BI see [www.hiredbrains.com/proclarity.pdf](http://www.hiredbrains.com/proclarity.pdf)

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**Reality:** What's more likely is that participation will increase when people can use tools that make sense to them. For example, there are literally billions of users of Google. At most a tiny fraction of those users have received "search engine training."

An easy to use search facility with useful page ranking was just the right amount of functionality to satisfy a clear need, and the value of the service was immediately apparent to those who would use it.

BI platform standardization may or may not be the right answer for an organization. Every situation has enough unique aspects that it is not reasonable to declare one approach correct and the others off-target.

In general, though, platform standardization arguments fail to counter the fundamentals that favor on-demand analytics. Standardization benefits accrue mostly to IT and to vendors, not to the wider audience of BI whose empowerment should be the enterprise IT mission.

The on-demand model appears to be a cauldron where new ideas can be tested easily, and those that have merit can quickly become robust alternatives.

## CONCLUSION

On demand is the natural result of the most fundamental change in computing since the PC. No longer just the connective tissue among active nodes representing diverse platforms, the Internet itself is increasingly the platform.

On demand offers relief from duplication, “not invented here” syndrome and soaring maintenance costs. But cognitive science, rather than engineering or economics, may be the discipline whose viewpoint best captures the gains to be had. The best solutions are those that people, either individually, or in groups, devise themselves to fit their particular needs—and modify as those needs change, or as their understanding of their needs becomes better informed.

Imposed “standards” of rules, definitions, reports, procedures and even presentation may satisfy the need for correctness and compliance on one level, but at a cost of innovation and usefulness. Allowing knowledge workers to make their own definitions, but to be clear about them and be clear when they differ from the “standard,” is a management issue. It should have never been delegated to software.

On-demand delivery of analytic capability has economic benefits that are already clearly evident in other application areas, but the benefits from the changing use of analytics in an on-demand environment will eclipse the economic cost savings. This depends, though, on users; on IT; and on vendors to pull together and modify their thinking about analytics to be successful.

- Users must consider their use of consumer Web applications, and be daring enough to demand the same level of simplicity and ease of use from business applications.
- IT must understand the needs of people in an organization—considered as contributors to a business, not just as “users”—when it comes to information access and analysis. Standardization is a legitimate goal, but it should be evaluated from the perspective of business contributions and not just costs. Current analytical investments should be clearly partitioned to separate infrastructure overheads from analytical assets.
- Vendors should understand that SaaS has arrived as a permanent shift, not a temporary swing of a pendulum like many that have come before. SaaS will entail enduring fundamental change to software business models and will force vendors’ representatives to spend much more time with people who require information access – not just IT departments struggling to minimize the cost of making things appear to work.

## ABOUT THE AUTHOR



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