

EXALEAD SOLUTIONS BRIEF

Exalead Solutions Brief

Search-Based Applications (SBAs)

A Revolutionary Model that Reduces
IT Costs and Complexity While Greatly
Improving Information Access



A Revolution is Underway...

Technologies derived from the Internet—specifically search engine technologies—have given rise to a revolutionary information access model that is as fluid and adaptable as the Web itself: the search-based application (SBA). Unlike traditional database-centered applications, SBAs provide information access via powerful **search and indexing technologies** rather than through **direct database queries**. To understand how and why this model is redefining information access, it is important to first understand the challenges inherent to the traditional database application model.

1 The Classic Database-Centered Model

Relational database technologies have defined information access for the enterprise since the 1980s, and the Web since the late 1990s, serving not only as the primary means for **storing** information, but also for **accessing** it. In the traditional database application model, data is entered in a relational database, and end users access this data via **pre-determined** Structured Query Language (SQL) queries. If the information a user needs is not in the database, or if retrieving it is too complicated, then for practical purposes, it doesn't exist. For IT, if costs or complexity become prohibitive, access is simply restricted. This heavy **hit-or-miss, single-source** model is out of step with today's **fluid information landscape**, a landscape radically reshaped by four trends:

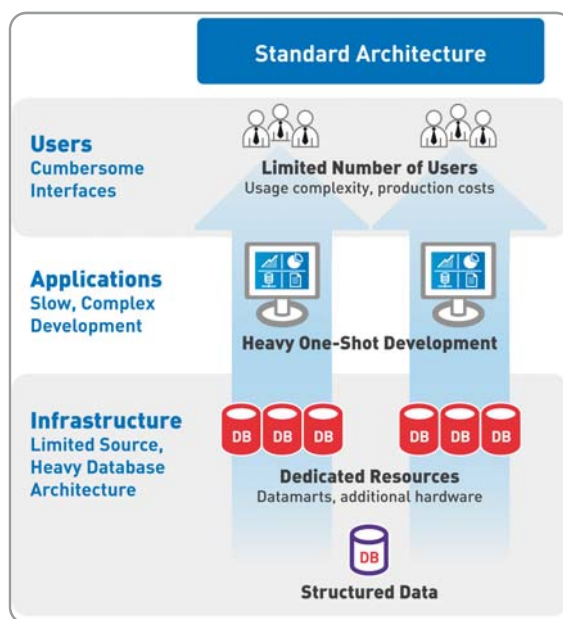


Fig 1: Traditional Database Application Architecture

The Rise of Enterprise Business Applications

Applications like supply chain management (SCM) and enterprise resource planning (ERP) have multiplied the number of database systems containing essential business information. Bridging these systems via **data warehousing** and **integration** has been complex, costly and of limited efficacy.

The Rise of User-Generated Content (UGC)

The use of personal productivity and communication tools has generated high volumes of content (multimedia files, Web pages, email, etc.) containing important **emotive and qualitative data**, but as this data exists largely outside of corporate databases, it has **remained unexploited** for business ends.

The Rise of the Web

Web-savvy workers are frustrated that important **Web data** (e.g., blogs, competitor sites, forums, etc.) is not available in mainstream business applications, and that these applications do not offer the Web-style **simplicity, interactivity and responsiveness** to which they have become accustomed.

Increasing Pressure for Agility

The Internet age has also fostered a fickle business environment, with markets moving at the speed of light, ever-shrinking customer attention spans, and continually shifting patterns of global sourcing and competition. Against this backdrop, **agility is critical**, yet traditional IS paradigms—together with shrinking IT budgets and heightened regulatory demands—are **stacked against agility**, favoring a constant and controllable business environment that simply **no longer exists**.

2 The Search-Based Application (SBA)

SBAs free businesses to capitalize on—rather than struggle against—these trends. An SBA platform like CloudView can collect **staggering volumes** of data from **any source**, in **any format**, and automatically transform it into a **single, meaningfully structured** information resource that can be directly searched and explored by users **regardless of their skill level**, or used to rapidly create a new generation of **agile business applications**. These applications—SBAs—can effortlessly **bridge information silos** and exploit **massive volumes of unstructured content** (like email, Office documents, and Web pages) for innovative marketing, streamlined operations and improved reporting and auditing.

Furthermore, thanks to SBAs' **non-intrusiveness** (they can be deployed and modified without altering existing systems), their **infinite scalability**, and the **rapid time to market** they enable (2-8 weeks on average for CloudView SBAs), businesses can meet these new challenges quickly, at a controlled total cost of ownership (TCO), and with a swift, high return on investment (ROI).

3 How SBAs Work

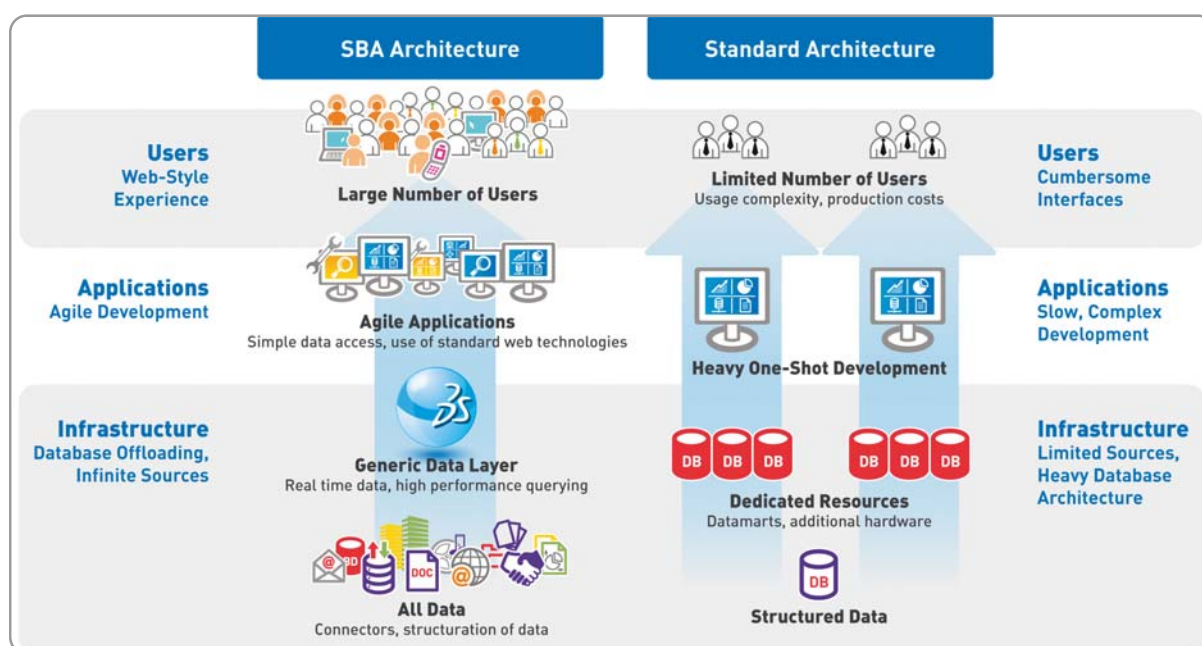


Fig 2: The SBA Architecture: More Accessible, Agile, Comprehensive—and Affordable

In an SBA, a search engine indexes content from **any source(s)** desired: databases, file servers, content management systems, email servers, the Web, etc. Whatever the number or type of resources indexed, a **single structured data layer** is created, **decoupling** data from underlying applications while **preserving existing data attributes** (e.g., classification information stored in relational data tables, and metadata like document file type, author and creation date). The engine then uses **semantic technologies** to reconcile formats, structures and terminologies, and to identify embedded meanings and relationships within and across resources, enriching data with **new attributes** gleaned from the content itself. This enhanced, unified data layer can then be directly queried by users, or easily tapped by applications using standard **Web formats and protocols** (SOAP, REST, XML, RSS, RDF, OWL, etc.). And the entire system **evolves in real time** as your data evolves.

4 How SBAs Are Being Used

SBAs are relevant for all applications in which information access (search and retrieval and content presentation) play a central role. They are being used to 1) improve database applications, 2) extend enterprise business applications, and 3) create innovative online mash-ups.

4.1 Better Database Applications

SBAs provide information access that is as rich yet **100s of times faster and far cheaper** than relational database querying. Because search engines are uniquely designed for fast information access ('read' operations) by vast numbers of users against massive data volumes, shifting queries from a database to an index can significantly **reduce costs** (e.g., **database offloading**) even as one **expands access and improves performance**. SBAs are being used for database applications including:

- **Pure Information Access Applications**

Online directories & classifieds, media portals, e-discovery, compliance, knowledgebases, etc.
SBAs can process Web-style **natural language queries** from users as well as application-level **structured querying** (XML, XPATH, XQUERY, etc.), and then provide faceted navigation of results that lets users drill down on an **unlimited number of data characteristics**, a breadth and depth impossible to achieve using traditional, pre-determined SQL queries.

- **Information Access Plus Operational Reporting**

Logistics (track and trace), quality control, network monitoring, survey banks, etc.

Real-time operational reporting in a database SBA is made possible by the engine's built-in **data clustering and statistical computation** capabilities. These capabilities can dynamically output results as **hyperlinked bar charts, maps, reports** and graphical dashboards.

- **Comprehensive Database-Centered Business Applications**

Customer service/call center, ecommerce, reservation systems, inventory management, etc.

For applications including database update functions, the search engine serves as the main data access layer within a larger application framework. This framework employs **model-driven architectures (MDAs)**, an **open source infrastructure**, and standard **Web formats and protocols**. Developed using **agile methodologies**, these applications offer a fast time to market, high performance, high scalability, and extensive operational agility.



Figure 3: Information Access and Operational Reporting for GEFCO

GEFCO customers use this CloudView SBA to track and optimize vehicle transport across 80 countries. Deployed in only 60 days, CloudView reduced the load on GEFCO's Oracle databases while cutting data latency cut from 24 hours to 30 seconds. Users can also now drill down on an endless number of characteristics for reporting and research. To learn more, see our Solution Brief: [Get More Out Of Your Databases with SBAs](#).

4.2 Extended Enterprise Applications

SBAs are also being used to bring new agility and expanded scope to enterprise applications like CRM, ERP, SCM, and Business Intelligence (BI) by enriching structured data with important **emotive and qualitative data** from vast 'unstructured' sources like email, blogs, chat, phone transcripts, and Web pages. In addition, because search engines can update large volumes of data in real-time even under heavy usage loads, they can significantly improve the **timeliness** of information. The result is enhanced **operational decision-making** and **competitiveness**. More intuitive, Web-style search also

boosts **adoption rates** and system **usage**, further increasing system ROI.

For example, CloudView can extend an existing CRM system such as Salesforce™ with structured and unstructured data from **internal sources** (file servers, support systems, email) and **the Web** (news feeds, networking sites, customer and competitor sites). As CloudView indexes this data, it normalizes, classifies and ranks it. It also mines the new uniform repository for **hidden relationships**. It then enables intuitive search of this unified knowledge base, supporting natural language querying and assisting end users with features like spell-check and phonetic spelling. CloudView can then present this data within an engaging dashboard that provides a deep, **360° view** of customers and prospects.

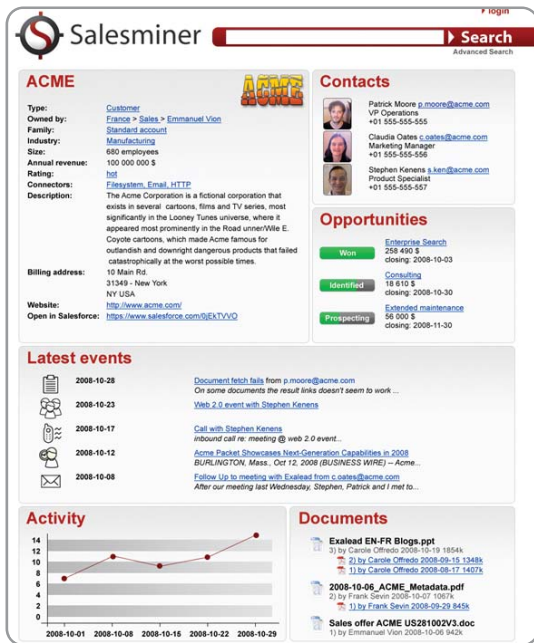


Figure 4: Extended CRM with CloudView

4.3 Innovative Web Applications

SBAs are enabling online businesses to create **innovative, high performance ' mash-up'** applications that seamlessly merge content and functionality from diverse sources such as databases, mapping services, business databases and the Web. These SBA mash-ups enable online businesses in fast moving, highly competitive sectors to generate **new revenue** and gain **critical agility**. At the same time, they **reduce IT costs, scale on demand**, and ensure a **rapid time to market**.

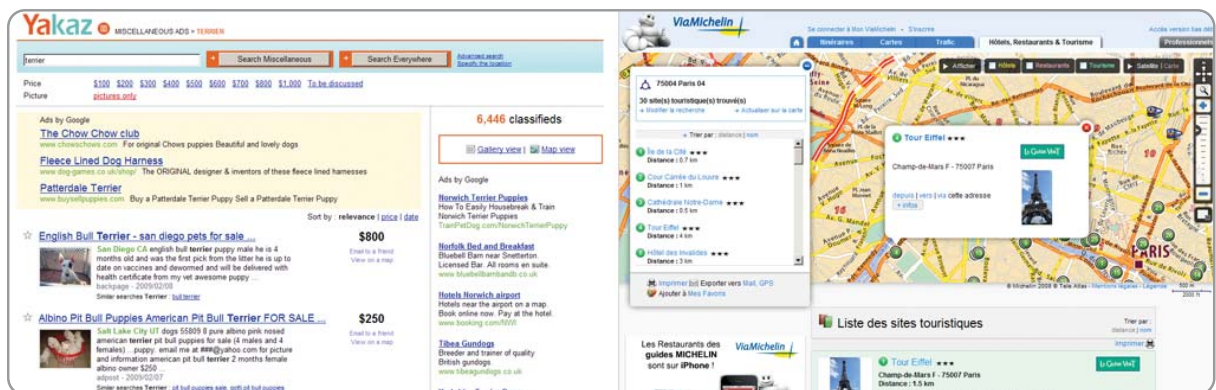


Figure 5: Online Innovation for Yakaz and ViaMichelin

For the classified ad portal Yakaz.com, CloudView provides unified, structured search of content culled from 7,500 websites. Developed in only 4 weeks, ViaMichelin, Michelin's CloudView-powered travel portal, is an engaging mash-up of database information, web content and dynamic mapping for 15 million points of interest (hotels, restaurants, attractions, etc.). It processes 800 queries per second using only 8 servers.

5 Exalead CloudView for SBAs

Exalead is the leading infrastructure provider for SBAs. Much of this success is due to CloudView's unique evolution: CloudView was designed from inception for both the **Web and the enterprise**. Because of this dual DNA, CloudView alone provides the balance of **corporate functionality** and **Web simplicity, scalability and innovation** essential for successful SBAs. On the Web side, CloudView drives an 8 billion (soon to be 16 billion) page public search engine and serves 100 million unique monthly visitors through its public and customer installations. On the enterprise front, CloudView couples Web performance and scalability with:

- **Advanced Semantic Processing of Unstructured Data**
CloudView can transform **enormous volumes** of unstructured data into a fully classified resource and **synthesize it with existing structured data**.
- **Superior Structured Data Handling**
CloudView can automatically unlock **every data facet** for immediate access—one does not have to decide in advance what views, summaries and reports will be most relevant for users.
- **Flexible Information Access**
Structured queries, fuzzy natural language search, numerical operations, and faceted navigation are **all natively supported**.
- **Full Compliance with Existing Security Systems**
CloudView tightly enforces existing security rules, yet does not impede the user experience, combining convenient **single sign-on access** with deep, **metadata-level security**.

5.1 Superior Usability

CloudView brings the simplicity of Web search to enterprise information access applications, offering:

- **Natural, 'forgiving' search**, with advanced semantic processors that can interpret imprecise requests and offer spelling corrections, close matches, and related content.
- **Navigation of results** by dynamically-extracted metadata.
- **Generous visual and reporting aids** with statistical processors that can generate clickable charts, graphs, reports and dashboards on-the-fly in response to user queries.
- **At-a-glance scanning** of results for unstructured content, with content extracts, file type icons, thumbnail images and rich **content previews** with **search term highlighting**.

This Web-style, '**zero-training**' usability is far more than an aesthetic courtesy: together with the platform's inherent scalability, it enables IT to finally **democratize information access**, promoting better **day-to-day operational decision-making** throughout an organization and helping users more effectively **identify and respond to change**. It also fosters innovation by placing users in the **driver's seat**: with dynamic data categorization, faceted navigation and open-ended drilling and reporting, users are **no longer boxed in** by a developer's vision of their information needs; they can freely explore meanings and relationships in the way that best serves their unique needs.

CloudView brings similar benefits to IT staff as well, providing an intuitive **Web-based console** for management tasks, and using automation, support for Web standards, and a generous API framework to simplify development so IT can finally achieve the independence they need for true agility.

CloudView's usability has earned it a 100% customer loyalty rate

5.2 Infinite, Cost-Effective Scaling

CloudView is the only enterprise search engine designed from inception for **multi-billion document scalability**. More importantly, CloudView scales **cost effectively**. The system is extremely **resource efficient**, supporting real-time indexing of **100 million** documents and processing up to **20 queries per second** on a **single commodity server**. And, thanks to its distributed architecture, CloudView scales on demand simply by adding inexpensive commodity hardware—**no painful migration** is required.

One server = 100 million documents, 20 queries per second

5.3 Agile, Open Architecture

CloudView further provides the most agile platform on the market. Its service-oriented architecture (SOA) and extensive application programming interfaces (APIs) ensure:

- **Unlimited Data Connectivity**
The platform connects to **any internal or external source** with built-in support for more than 50 languages, 320 data formats, and 50 types of databases, plus an open collection API.
- **Unlimited Application Versatility**
The universal data layer CloudView creates provides developers with a highly versatile resource that they can **exploit in infinite ways**—without having to modify underlying data structures or worrying about impacting production data.
- **Unlimited Access Flexibility**
CloudView supports fuzzy **natural language search** as well as **structured queries**, and offers an interaction API for complete **presentation versatility** (lists, categories, bar charts, graphs, maps, real-time operational reports, dashboards, etc.).
- **Rapid Time to Market**
CloudView's **plug and play** design; unified, independent data layer; open API framework; and support for standard Web formats and protocols makes CloudView ideal for **rapid prototyping** and iterative, **agile development methodologies**.
- **Unmatched Scalability, Performance and Availability**
CloudView is designed for easy process distribution, load balancing, index partitioning and index replication, ensuring the platform can grow and adapt painlessly and inexpensively as business requirements change.

6 SBAs + CloudView: The Right Choice Now

SBAs are redefining information access because they are meeting:

- **End users'** need for fast, intuitive access to decision-making information
- **Businesses'** need for greater agility and competitive differentiation
- **IT's** need to simplify operations and reduce costs while more closely aligning IT services with business needs

CloudView is the platform of choice for SBAs because of its superior semantic processing of unstructured and structured data; its unlimited, linear scalability; the multi-level agility it brings to organizations; and its high usability. Call us today to discover what a CloudView SBA can do for you.

About Exalead

Founded in 2000 by search engine pioneers, Exalead is a global software provider in the information access and enterprise and Web search markets. More than 250 companies worldwide and 100 million unique users a month rely on Exalead's information access platform to search, discover, and manage their information assets for faster, smarter decision-making, real-time unified data access, and improved productivity.

Exalead's team includes industry-leading experts in information search, non-structured data analysis, and natural language processing. This team has concentrated its R&D efforts on meeting its clients' need to collect, transform, index, and search arbitrarily complex data from heterogeneous sources.

As a result, the Exalead CloudView product has emerged as a uniquely successful platform for automatically structuring very high volumes of nonstructured data, such as email messages, Office documents, presentations, Web pages, blogs, forums, and RSS feeds, and meaningfully synthesizing this data with structured content.

CloudView is currently being deployed for Enterprise Search, Embedded Search for OEMs/ISVs, and Search-Based Applications including:

- Extended Business Applications (harnessing unstructured data to enhance enterprise applications like BI, SCM, CRM, ERP and Compliance)
- Innovative Web Applications (search and intelligent mash-ups for high traffic websites)
- Improved Database Applications (database offloading and agile development for information access, operational reporting, and comprehensive business applications)

For more information, please visit <http://www.exalead.com/software>. The company's public WWW search engine is accessible at <http://www.exalead.com/search>.



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