

## TECHNOLOGY AUDIT

# exalead one:search 4.5









Exalead




## BUTLER GROUP VIEW

### ABSTRACT

*Exalead's enterprise solution exalead one:search is a search tool that has been designed to evolve organically as the volume of information within organisations continues to grow and their need to search for information changes. There is a growing need within organisations for effective search capabilities driven both by compliance and litigation risk, and also a need to be able to locate information easier in order to improve productivity and share information throughout the enterprise. A strength of the product is its patented Search by Serendipity® navigation system, which enables users to search for information in the same way in which they think. A slight weakness is that the product does not have all of the features of some search engines, although Butler Group does not believe that this detracts from the product in any way, and may even turn out to be a strength for organisations that need a global search infrastructure with a series of application-specific add-ons that Exalead's open architecture makes easy to integrate. The product is suitable for any organisation that has a requirement for a search capability, whether it is for the enterprise, the desktop, or as a Web search tool.*

### KEY FINDINGS

- |  |   |
|--|---|
|  Uses the patented Search by Serendipity navigation system.       |  Provides desktop, enterprise, and Web search within a single architecture.  |
|  Searches across multiple data sources.                           |  Support provided for 54 languages.  |
|  Includes a built-in spell checker.                               |  Searches can be refined using criteria defined at the administrative level. |
|  Highly scalable and can deliver thousands of queries per second. |  May not contain all of the features of some enterprise search engines.      |

Key:  Product Strength  Product Weakness  Point of Information

### LOOK AHEAD

The roadmap for exalead one:search includes additional connectors and renewed connectors for SharePoint 2007 and Documentum e-Room, advanced security management features, a new API package for front-end customisation, integration with several advanced linguistic, semantic, and text-mining products, built-in scalability and high performance, and user interface improvements.

## FUNCTIONALITY

Compliance and litigation risk are forcing an increasing number of organisations to retain information often for long periods of time. This requires having the ability to search through growing volumes of unstructured information and structured data, to discover and retrieve information and data to satisfy requests from regulators or the courts. Of course this is not the only reason for implementing enterprise search; it is also required to enable users to access information speedily in order to fulfil their roles more efficiently.

There are two approaches to enterprise search. The first is to use the search tools that are often supplied with individual applications such as an Enterprise Resource Planning (ERP) application or an Enterprise Content Management (ECM) platform, but this approach can result in a user having to search across each application in turn with a separate search tool and then somehow aggregate the final results. If the point of the search is for compliance or litigation, then this can greatly increase the time taken to achieve the final result set. The second approach to enterprise search is to implement a single search tool at the infrastructure layer that is capable of searching across all applications and repositories in a single unified search to provide a single result set.

Exalead is a vendor that provides an enterprise search tool that enables organisations to apply single searches across all of their repositories, in addition to conducting desktop and Web searches.

### *Product Analysis*

Exalead's enterprise solution exalead one:search is a search tool that has been designed to evolve organically as the retrieval needs and access to information change within organisations. One of the strengths of the solution in Butler Group's opinion, is that all of its solutions including desktop, Web, and enterprise search, utilise the same architecture and technology. Exalead's architecture was designed with 64-bit grid computing in mind and it makes full use of modern 64-bit multi-core processors, one of the reasons for its high level of scalability. The company has placed its solution firmly in the infrastructure layer, from where it is able to search across multiple data sources.

Exalead believes that a differentiator for the company is the fact that it has focused on both Web and enterprise search since its inception, and this has enabled it to provide a unified platform for integrated desktop, enterprise, and Web searches. However, the major differentiator is Exalead's patented Search by Serendipity® navigation system (illustrated below), which enables users to search in the same way in which they think. Each search query results in a table of contents being generated by recording the information's structure. Users are then able to refine their search by clicking on hyperlinked categories and related topics, or by location, author, or format. Irrelevant terms in topics can be easily excluded from the search. A perpetual problem encountered in searches is that the words used in the original query are often not contained within the document that is being searched for. This problem is overcome in exalead one:search by providing the user with related terms and categories to allow the search to be broadened, refined, or even re-focused.

**Figure 1: exalead one:search architecture**

The screenshot displays the Exalead search engine interface. At the top, there is a search bar containing the text 'air liquide' and a 'Search' button. To the right of the search bar are links for 'Sign out', 'Profile', and 'Preferences'. Below the search bar, a 'Search Results' section indicates 'Results 1-10 of about 177 for air liquide'. The results are sorted by relevance. Each result entry includes a thumbnail, a title, a brief description, and a date. The 'Refine your search' sidebar on the right allows users to filter results by Source (mail, INBOX, Files, Marketing documentation, pack, web), Sender (Exalead, Folis), Recipient (tous-fr@exalead.com), Document type (Pdf, Html, E-Mail), Date (2007, March 2007, June 2007, July 2007), Language (English, French, German), Organization (Bnp Paribas, Air Liquide, Aol France), and People (Francois Bourdoncle, Nick Patience, Sue Feldman). A 'Search within results' field is located at the bottom of the sidebar.

Source: Exalead

**DATAMONITOR**

The core linguistic and semantic technologies and data structures of the product are updated in real-time and are all transactional. Indexing is also performed in real-time and this extends to situations where document collections are split over many machines and into several indexes.

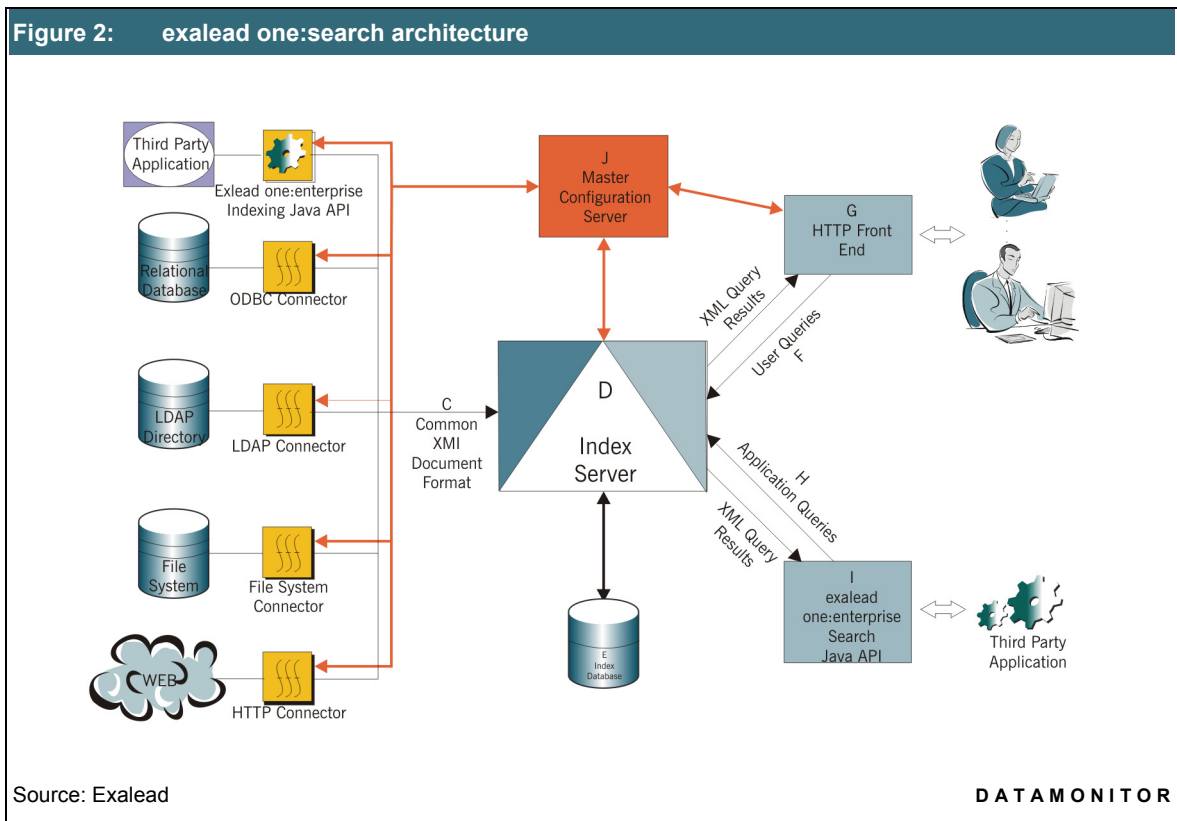
Exalead is deservedly proud of the fact that all of its linguistic technologies have been developed in-house and have been under development for eight years. In all, 54 languages are supported including Chinese, Russian, Hebrew, Arabic, Japanese, and other major Asian languages.

A feature that Butler Group regards to be a strength of the product is the built-in spell checker, which takes advantage of all of the documents that have been indexed in order to assess whether a word has been spelt correctly. Information provided with each item returned in a search includes the location of the item, which would be a folder for an enterprise document, or a URL for a Web item. A preview pane is provided to allow documents to be previewed before they are opened. There is also the ability to refine the search using criteria, which is defined at the administrative level, such as people, location, and organisation.

Exalead one:search uses a patent-pending technology (in Europe and in the US) that makes it very easy to extract a “sub-index” from an enterprise-wide index without accessing any of the original documents. This “XML extract” feature is important, particularly in a compliance environment, to provide a regulator or court with an index containing all of the documents about, for example, a particular topic, customer, or product.

Exalead provides a powerful search capability through exalead one:search. However, it may lack some of the finer features of some other search engines, which could put it at a disadvantage if organisations want all of the ‘bells and whistles’ possible with a search engine. However, Butler Group does not feel that this should detract from what is a highly scalable and flexible search tool.

**Product Operation**



There are three core levels to exalead one:search, which are, the user level, the infrastructure level, and the data source level. At the user level, out-of-the-box search interfaces are provided that are designed for global corporate use, and specialised knowledge dashboards for specific user groups. These provide the flexible navigation of results by categories, related terms, file type, and language; thumbnail images to provide a quick evaluation of the results; rich content previews that highlight the search term; phonetic and approximate spelling search, and a full-blown Boolean syntax with proximity search operators.

At the infrastructure layer the indexing engine is a fully transparent white box, designed to securely connect users to an organisation’s data sources and to transform raw data into actionable information through advanced indexing techniques. The data source layer provides the indexing capability, which supports, virtually any format and source on the desktop, throughout the enterprise and across the Web and other external sources, according to Exalead.

From an architectural perspective exalead one:search connectors, which are shown as 'A' in Figure 1, use the information source's native protocol to retrieve documents from the information sources. They convert content into a common XML document format. Custom connectors can be created using a Java API ('B'), and at 'C', the XML documents are sent to the index using the network. The index server, depicted by 'D' maintains the index database by processing the XML documents that have been sent by the data connectors, and executes the query sent by the HTTP front-end or the search API. The index database ('E') is optimised to reference large quantities of XML documents and to quickly serve queries. Front-end queries are sent to the index server and the results are returned in XML format ('F'). At 'G' the HTTP front-end provides query formatting for the user front-end, whilst at 'H', queries from third-party applications are sent to the index server and the results are returned in XML. A Java API ('I') encapsulates the query execution and the parsing of the XML results. Finally, the master configuration server ('J') provides a HTML interface through which the platform administrator can remotely configure the search engine.

The indexing technology is highly scalable, with the ability to index several hundred million documents on a single server at the same time as it is delivering thousands of queries per second. Exalead's indexes typically take 30% of the size of the indexed text, according to the company. In addition, it is possible to reduce the size of the index to as small as 5% of the size of the indexed text by dropping some of the most advanced functions.

Fault tolerance is enabled by the exalead one:search components using XML with client/server protocols that can be distributed over different physical servers, and the ability to combine different operating systems and types of hardware. The file system structure of the index files makes it easy to back-up and replicate the index database, which means that multiple instances of the same index server can be deployed on different machines by synchronising the index database directories. The front-end can be configured to balance the queries between the physical servers and to automatically stop querying dead machines.

## **Product Emphasis**

There are many different types of search that are conducted within organisations. Individuals may have a requirement for desktop search to enable them to find documents that they may have created several years ago. They may have a need to search particular applications such as their e-mail client to locate specific e-mails. At the enterprise level users may need to search shared drives for information that spans a single or multiple applications, and users may also need to undertake Web searches. As compliance needs grow, and organisations require the ability to speedily discover information to meet specific requests, the requirements for effective enterprise search capabilities become increasingly business-critical. The advantage for organisations deploying exalead one:search is that the product has a single architecture and technology, so that it can easily be implemented to address the particular requirements of an organisation, whether it be for desktop, enterprise, Web searching, or a combination of the three. In addition, the open architecture of the Exalead products makes it very easy for large organisations to standardise on a single search infrastructure and verticalise this infrastructure as needed by implementing the appropriate third-party add-ons, for example, linguistic, semantic, text-mining, or categorisation modules.

## **DEPLOYMENT**

The product supports on Windows 32-bit: Windows 2000, Windows 2003, and Windows XP; on Windows 64-bit support is provided for Windows 2003, Windows x64, and Windows XP x64; support is also provided for UNIX 32-bit and Linux 32-bit; and support is provided for UNIX 64-bit on: Solaris, Linux x86-64, and IBM AIX version 5.2.

According to Exalead, organisations should be able to implement the product without any third-party assistance. All that is required in terms of skill is standard engineering skills in Windows, or UNIX, and a minimum understanding of the indexed databases. The average time required for an implementation depends on the complexity of the project. For example, exalead one:enterprise can be installed in a matter of days for standard Internet or enterprise search, or weeks for full enterprise search or business-critical applications. The architecture supports deployment in a modular fashion. Once implemented, an IT administrator is required for technical administration, and the application can be easily customised, which requires functional administration.

Technical training is available for an engineer or IT administrator through a two-day programme in which the engineer learns about all of the components of exalead one:search from the installation to the final production level. This course trains engineers and administrators to be independent in the exploitation and development of the exalead one:search applications. A large part of the second day is dedicated to practical situations and examples. Training can be carried out in the classroom, on-site, or via the Web.

Exalead provides a technical support hot line service as well as maintenance of the software to correct bugs and develop the product. The hot line is available during working days between the hours of 9:00am to 5:00pm. Extended support options outside of these core hours are available for customers who have business-critical applications.

The product does not require any additional software or application server to be installed prior to its deployment. exalead one:enterprise relies on a few third-party open source libraries such as OpenSSL, OpenLDAP, or XpdfText, and OEM connectors such as DataDirect ODBC drivers or the Stellent filters. All these libraries are shipped within the product and are automatically installed along with the one:enterprise software.

Business processes should not need to change to use exalead one:search, although using a search tool should speed up the search process and make users more productive.

According to Exalead, the major risks that can cause the project to fail relate to security matters. However, Exalead's software adheres to all existing security protocols and easily adjusts to business rules. In addition, traceability and data recovery, and compliance with regulatory standards are provided by Exalead.

The offering includes the desktop product, connectors, redundancy, and availability options, and is priced according to a combination of the volume of text or the number of documents and number of users or the queries per month. The pricing for OEM sales is more flexible.

## PRODUCT STRATEGY

The target market for exalead one:search in the direct-to-customer IT market is the upper end of the search arena, which comprises large enterprises and/or operations with enormous data stores. Vertical sectors being perused include, financial services, telecommunications, pharmaceuticals, life sciences, retail, manufacturing, and government. However, the product is suitable for organisations of any size from a single to thousands of desktops and from small businesses to global enterprises.

For standard enterprise search, Return On Investment (ROI) is measured in terms of factors such as the amount of time that is spent using the software, the volume of documents recovered and not re-created through reuse, and the ability to share information.

Exalead sees a major opportunity arising from the recent trends in search that have focused on specialised functions such as image and video search, which demonstrates the importance of being able to index these specific types of content. As such, Exalead is working to develop industry-specific applications for customers in sectors such as financial services and healthcare. In full enterprise search an opportunity is the ability to unify information sources wherever they are located whether it is on the Web or within the enterprise. Another opportunity is hybrid search or the ability to recreate information access applications by mixing structured data and unstructured information. There is also the emergence of Business Intelligence applications based on text, figures, and a combination of the two. The company also sees an opportunity in social search as an alternative to the dictatorship of algorithms. Finally there is a new type of user interface emerging, which has been inspired by the Web interface to help users better understand and analyse information, which Exalead believes gives the company a competitive advantage.

Exalead's sales organisations sell exalead one:search directly in France, Italy, the UK, Germany, and the US, and through reseller and OEM partners across the globe, in approximately 30 countries. There are business relationships with IBM and CA. In addition, there are several OEM agreements. The technology has been integrated with applications from e-mail archiving company Messaging Architects, Knowledge Management vendor Knowings, and storage management vendors Exanet and H&S.

Key technology partners are: IBM, Messaging Architects, Lingway, IRCAM VECSYS, HP, Systran, LTU Technologies, DataDirect Technologies, NStein, Britannica, Knowings, Softissimo, Stellent, Synapse, Systran, and Temis. Exalead is an "Advanced IBM Partner", and its solutions one:desktop and one:enterprise are certified for IBM Lotus Notes Domino version 8. The company considers core competitors to be other vendors that serve the enterprise search market.

Licensing fees are based on a combination of the type of customers and availability expectations, the volume of text or the number of documents, and the number of users or the number of queries per month. It is a perpetual licence with a maintenance fee. The pricing for OEM sales is more flexible.

The average cost of an implementation varies from €100,000 to €500,000 with 70% of the cost comprising licences and 30% for services. Annual support and maintenance is priced at 20% of the licence fee per year, and it includes the hotline and classical technical support as well as major and minor licence upgrades.

Much of Exalead's go-to-market focus in the US is on the OEM channel, and as such it is concentrating effort on seeking and securing partnerships as well as more traditional OEM business relationships. It already has such partnerships with CA, IBM, and other vendors. In addition to Messaging Architects, Exanet, and H&S, its search technology is being employed on a 'white label' basis for Arabic and Hebrew-language search engines. The company is also looking at establishing Infrastructure Management OEM relationships with the major players that manage and move unstructured data as they require search capabilities. In addition, there are opportunities for making OEM arrangements with business applications vendors where compliance requirements mean there is a need to discover information, and also where the combination of structured and unstructured data demands hybrid or vertical searches to be undertaken across multiple repositories.

Exalead sees the main threat to its market share coming from further consolidation in the search market.

## COMPANY PROFILE

Exalead is headquartered in Paris, France, with offices in New York and San Francisco in the US, Italy, Germany, and the UK. The company was founded in 2000 by Francois Bourdoncle and Patrice Bertin who had both been researchers for AltaVista, and felt that the process of information search and retrieval had become too hard, and that people using Web search engines on a daily basis for business-related searches, had expected but did not receive the same user experience from their enterprise search engines. To address this, Exalead invested significant resources to develop an intuitive user interface for consumer-related search on its Web search engine ([www.exalead.com](http://www.exalead.com)), then adapted this knowledge to its enterprise-class search technology.

Exalead is an operating unit of Qualis, an international holding company with principal offices in Paris. Exalead has about 100 employees around the world with more than 80 in France, 8 in the US, and 10 in its other European offices. Research and Development accounts for around 40% of staff, Sales and Marketing about 25%, Support and Services approximately 13%, and Administration about 10%. The company is expecting around 50% employee growth during the next 12 months. In terms of revenue, 60% is derived from France, with a further 20% from the rest of Europe, and 20% coming from the US.

Customers of exalead one:search include BNP Paribas (bank), Manutan (pan-European equivalent of Staples), The Sanger Institute (genome research institute), the Irish Chartered Accountance, Air Liquide, DCN (naval systems), Bel Groupe, AFNIC (French domain registry), and Danone (dairy/water). Exalead has also secured early customers in the U.S. with CareerBase, PCS Telecom, INFONXX, and American Greetings. There are approximately 110 customers worldwide using exalead one:search-based solutions.

## SUMMARY

As with other areas of technology, the enterprise search market is undergoing a period of consolidation, and a number of specialist search vendors have been acquired, emphasising that this is a lucrative area of technology, as several of the larger Enterprise Content Management (ECM) and other application vendors OEM enterprise search engines to provide the search capability within their applications. Whilst this boosts the revenues of the search vendors it also makes them attractive to larger multiple product vendors that need a search capability for their own products.

Although it may not provide all of the features of the most extensive search engines, it does nevertheless have important differentiators including ease-of-deployment, a business-critical focus, and a single platform for all of its search types, and Butler Group certainly does not feel that the product is lacking in any important features, and believes that it is worthy of a closer examination.

Table 1: Contact Details	
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