

Don't Search, Just Find!

The implementation of the e:IAS at the DATEV eG.



empolis' e:IAS as an infrastructure technology
for intelligent information classification and retrieval.

Executive Summary

Headquartered in Nuremberg, Germany, DATEV eG is Europe's only cooperative software company and IT service provider dedicated to serving tax consultants, auditors and lawyers as well as their clients. With close to 39,000 members, approximately 5,500 employees and sales of 585 million Euro in 2006, DATEV, founded in 1966, is among the largest information service providers and software companies in Germany and Europe.

Building on its strong market position in Germany, DATEV is seeking to bolster its activities in Europe – a strategy that requires good market positioning, powerful and user-friendly products and best-in-class information management systems. Only by equipping itself with these can DATEV offer compelling, marketable products, penetrate new business areas and continually grow its membership and customer base.

The company has been tapping the benefits of the empolis:Information Access Suite (e:IAS) as a company-wide, flexibly scalable classification and search technology since 2004. As a uniform and central technology for information management deployed as an infrastructure component, e:IAS already provides the backbone for a host of DATEV's mission-critical projects, including its LEXinform knowledge base, Internet and Intranet portals and support services.

By opting for e:IAS's intelligent infrastructure technology, DATEV has prepared itself with incredible foresight, from a business, technological and organizational perspective, for present and future challenges facing the complex issues of classifying, retrieving and acquiring information.

The technology deployed by DATEV is characterized in particular by its capacity to automatically exploit even the largest of data sets stored across numerous databases and enable this data to be searched in a user-friendly way. Thanks to high quality information acquisition – the foundations for user-friendly and convincing search results – end-users can display best matching documents almost immediately or can refine their research requests using a variety of different search methods (such as tolerant searches and similarity searches). As such, information can be retrieved from various sources (both internal and external) and displayed according to user authorizations or requirement profiles. This supports the individual and task-driven search habits of end-users and delivers knowledge-based support for business processes.

Key to successful knowledge workers is high quality information that can be accessed from diverse database sources. Mission-critical information must be accessed quickly, easily and without special search expertise. Thanks to e:IAS, DATEV is armed with a raft of intelligent search technologies that can be used individually and in response to specific solutions in a variety of scenarios.

The benefits of a flexible infrastructure component and a technology architecture built on open standards not only drive down DATEV's investment risks for future solution design – they also reduce the effort required to extend existing and implement planned information management solutions.

Dr. Michael Seyd, member of DATEV's management board, summarizes the company's project experiences to date: "By singling out empolis' solutions for our information management needs, we've not only secured the use of leading-edge technologies. We've also found a strategic partner to support us in responding to design and technical questions. Central to our decision was empolis' years of experience in knowledge management and the future investment security derived from the company being part of the Bertelsmann Group."

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1 Intelligent Information Management at DATEV eG

Since its foundation as a professional IT service provider in 1966, DATEV has carved out a leading market position in Germany, boasting over 39,000 members and more than 5,000 employees. The company's members and industrial target groups are tax consultants, auditors and lawyers. DATEV also possesses extensive, content-rich information and knowledge databases which its members, customers and own employees access as knowledge workers.

The LEXinform knowledge database contains over 450,000 high-quality documents which never stops expanding. Over 2 million pieces of information are available in the DATEV Intranet. More than 13,000 documents can be accessed from its public Internet site. Close to 7,000 documents reside in other, various information databases and more than 140,000 documents are available as product status information. This is by no means an exhaustive list. As such, it was necessary, strategically as much as operationally, to consolidate DATEV's market position as a knowledge manager and broker and use knowledge to drive the evolution of its core business areas.

As early as 2002, DATEV's research and development department tackled the key issues of how to, on the one hand, streamline internal information management practices and, on the other hand, how to prepare its business activities for the future. The following five factors were defined as factors of success for a modern and future-oriented information management system:

(1) Simple and centralized access to all information systems

Internal and external sources of information must be accessible from a common access point in the future. Depending on their access rights, end-users must be able to search all available information systems using one single search query.

(2) Homogeneous and clearly structured search results

Even when searching diversely structured information sources, end-users must be able to display search results in the same manner, thereby enabling them to directly compare retrieved information.

(3) Cross-referencing of information

Knowledge only occurs when information is logically cross-referenced. This requires that related content be recognized intelligently and automatically.

(4) Intelligent processing and aggregation of information

To enable end-users to quickly and correctly assess the relevance of documents or information, search results must be displayed intelligently, for example by using short summaries or percentage figure to denote pertinence.

(5) Flexible IT infrastructure

In general, off-the-shelf solutions are rigidly designed and difficult to use for other requirements. In contrast, using classification and search technologies as infrastructure components is more flexible and can be integrated easier in existing IT environments and custom tailored to match individual solution needs.

DATEV drew up an internal requirements catalog as the basis for selecting a technology and solution provider. Following an intensive test and evaluation phase in 2003, the company opted for the empolis: Information Access Suite (e:IAS). To reach this decision, DATEV considered a host of issues,

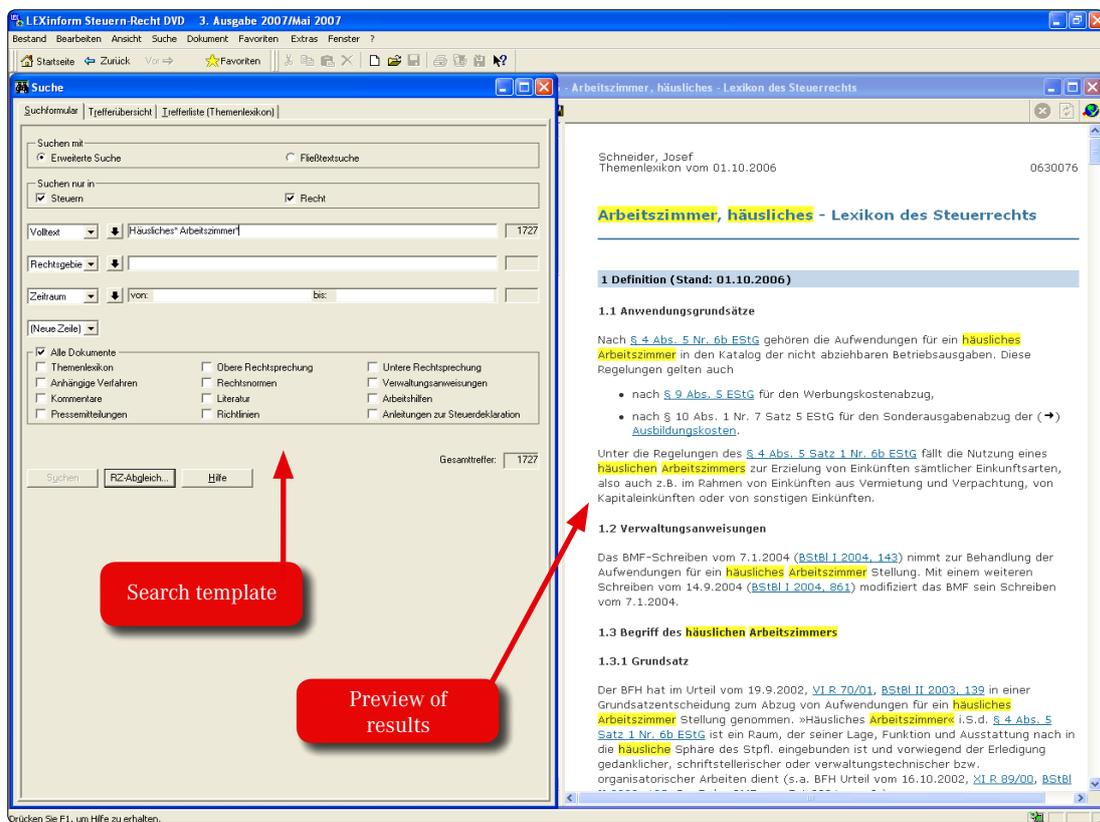
including technology, quick integration into the present IT landscape of the DATEV organization, the possibility of further development as well as investment security.

At DATEV, the complex issues of information classification and retrieval included a wide range of products, application areas and company divisions. Once it had signed a contract with empolis in 2004, the Datev AG therefore focused on four particularly important task areas (sub-projects) as part of an initial implementation phase:

- Improvement of the search functions in the LEXinform full-text database
- Knowledge-based support for support and service requests
- Introduction of a powerful search engine for the DATEV Intranet
- Improvement of the public search functions of the DATEV Internet portal

1.1 LEXinform – DATEV's Knowledge Database

LEXinform is a knowledge product from DATEV that provides the latest, high-quality expert and background information on taxation, law and economics. LEXinform currently offers over 450,000 documents. The available information content is continuously expanding. LEXinform is available to subscribers as an online data center version (LEXinform on the Internet) or as an offline (DVD) and online (data center) Windows program. Via the data center synchronization, DVD users are always up to date. Both the online and offline versions of LEXinform were equipped with the e:IAS classification and search technologies.

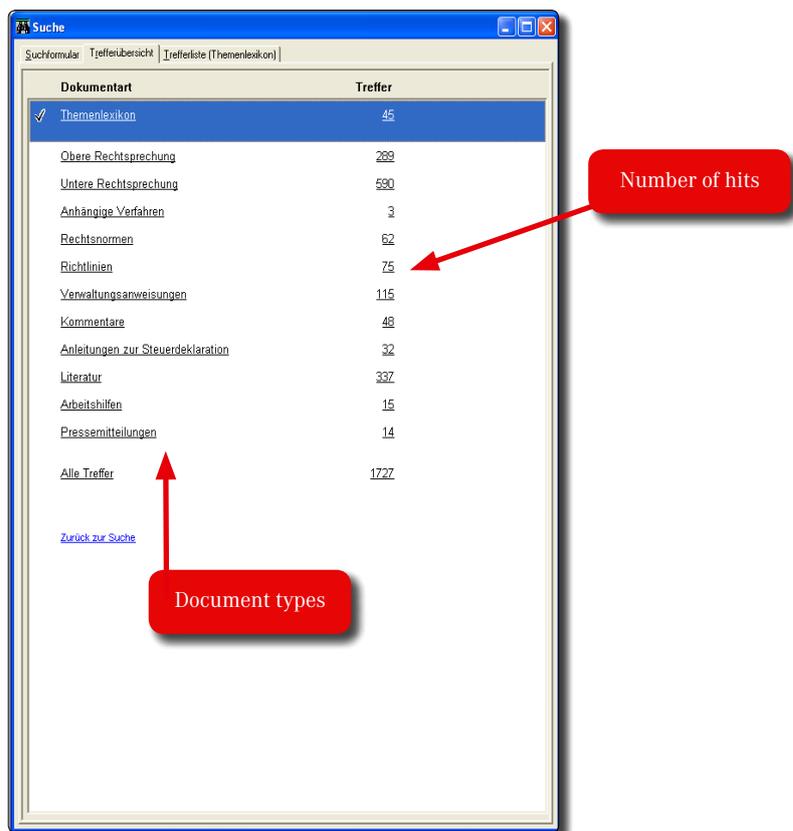


Source: DATEV eG, LEXinform – Advanced Search

The implementation of the e:IAS technology increased the capabilities of the former BRS (Library Retrieval System) without subjecting end-users to new technical challenges. When searching for specific terms, the technology uses intelligent procedures to provide end-users with powerful options for extending or refining the scope of their searches. Both systems return an overview of search results, sorted by topic area for initial orientation.

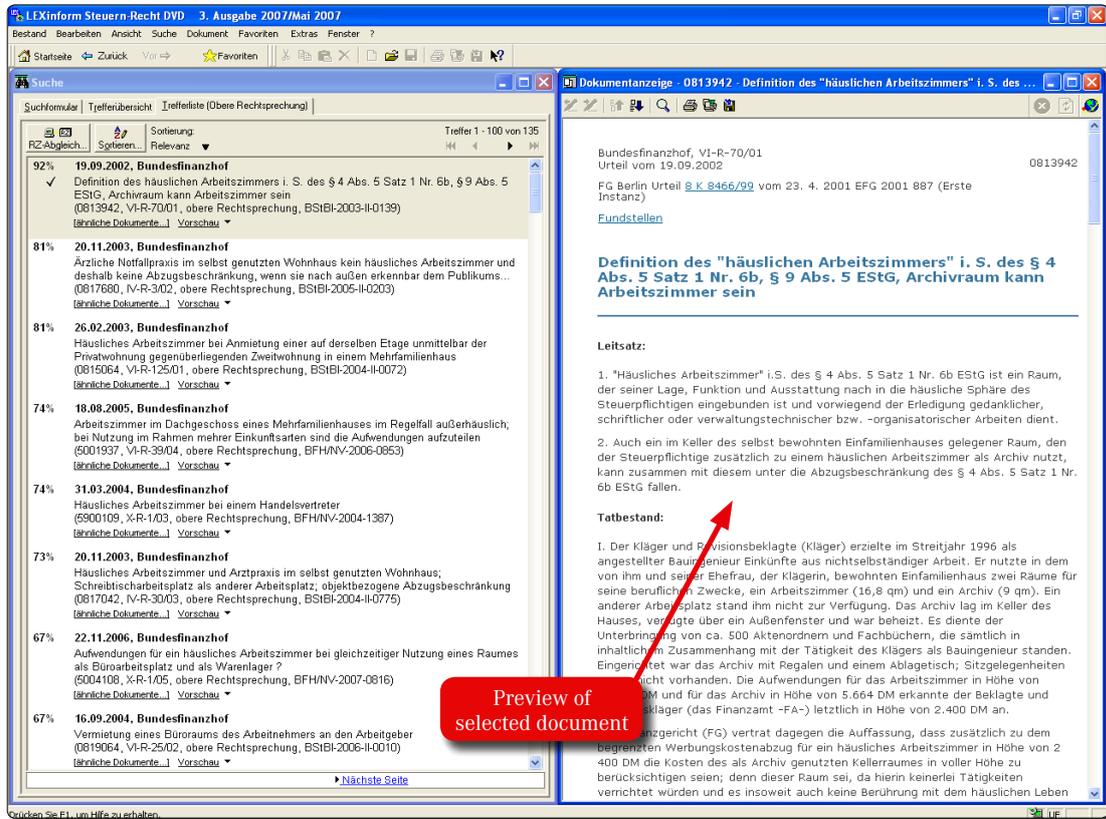
In many cases, a Boolean full-text search (a simple form of information retrieval linking the words in a search query with search operators such as AND, OR and NOT) meets end-user requirements. However, this type of search can find only documents containing the exact words or partial words of the search query. If, for example, end-users are inexperienced, the search may not return the desired results. In such instances, users require intelligent solutions based on e:IAS – such as similarity searches or tolerant searches – that automatically propose different spellings or similar search terms. The combination of a multitude of different search technologies embedded in e:IAS make the infrastructure technology particularly user-friendly.

Knowledge workers, including in particular DATEV employees, must also be capable of retrieving meaningful search results using natural-language search requests (such as questions formulated as complete sentences). This capability is delivered by the free-text search.



Source: DATEV eG, LEXinform – Search Results, Sorted By Type of Document

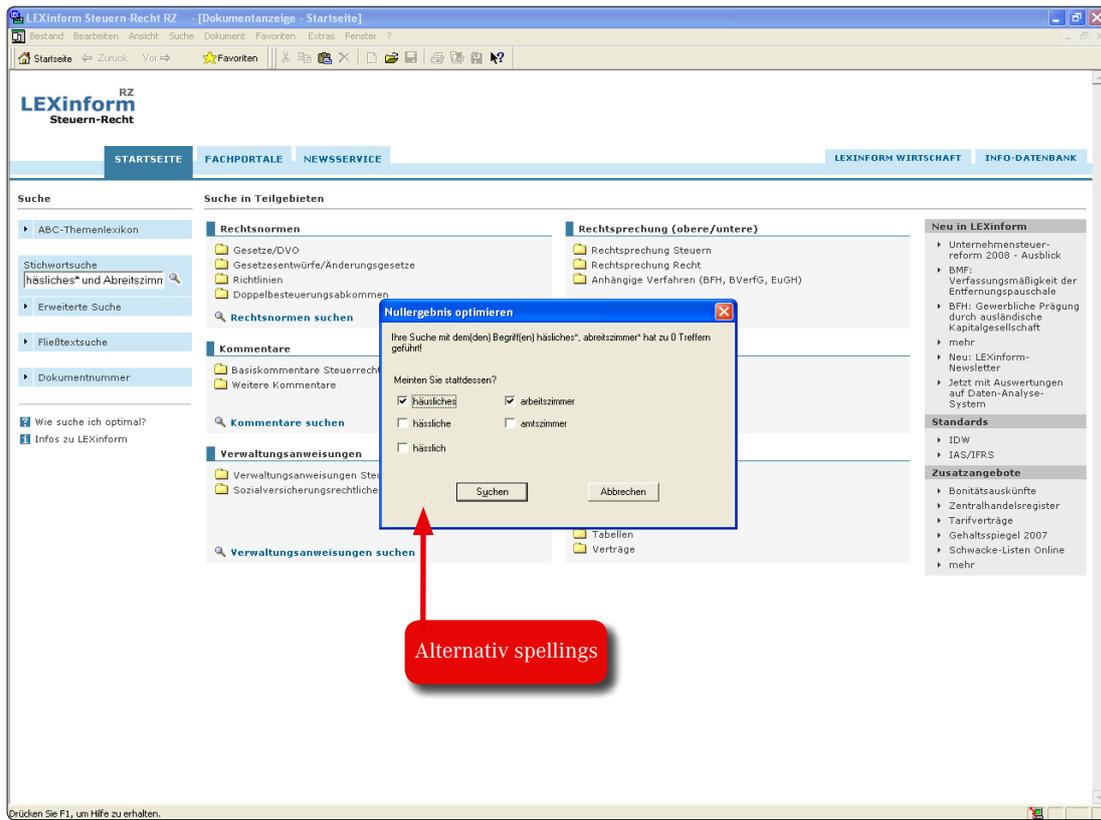
For ease of orientation, end-users can first view an overview of search results which displays all hits (in this example, 1,727 documents) by document type and number of hits. They can then narrow the results by clicking a document type. In this example, case law documents have been selected:



Source: DATEV eG, LEXinform – Search Results of a Free-Text Search, Displaying Respective Relevancies

The results are refined and the retrieved documents are displayed by relevance to the search query (as represented by a percentage figure). End-users can easily display additional information, such as a document's creation date, its information source, reference number and even a short text explaining its purpose. Document previews are possible with a simple click of the mouse.

e:IAS also equipped DATEV with a similarity search, which uses a selected document as the basis for an associative search to identify similar search terms which in turn are used to find appropriate documents. As such, e:IAS supports meaningful combinations of search types that guarantee high levels of intelligence and accuracy.



Source: DATEV eG, LEXinform – Tolerant Search with Alternative-Spelling Proposal Capabilities

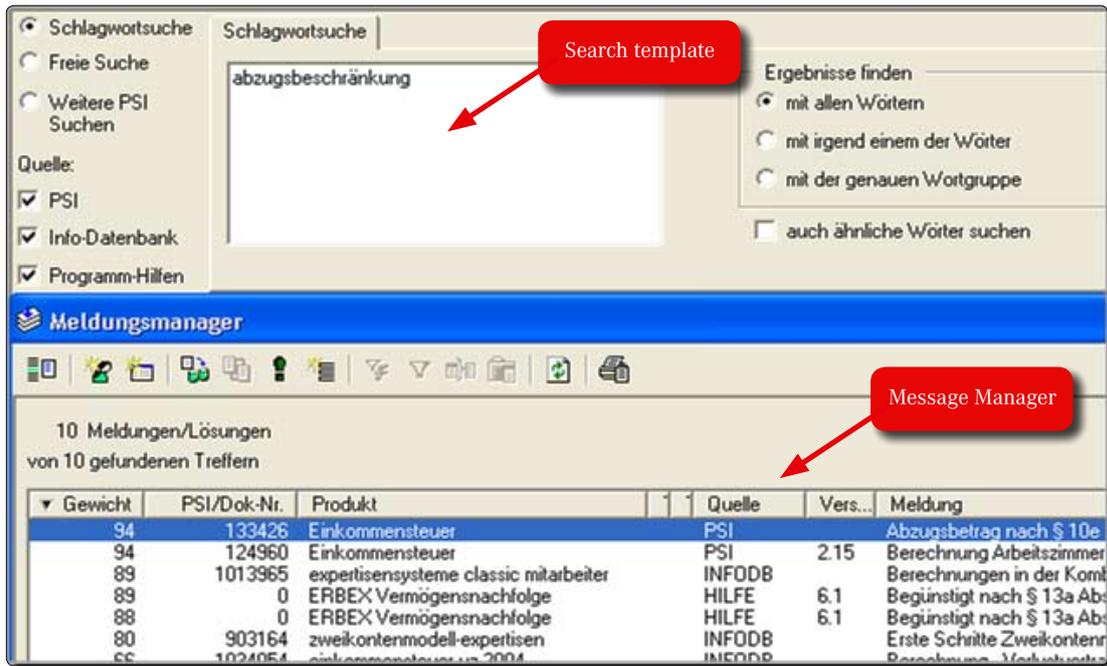
With other search systems, end-user spelling mistakes lead to no results being returned. To avoid such unsatisfying situations, e:IAS proposes alternative search terms that can be used to repeat a search.

The sum of the benefits mentioned above leads to the new technology and its wealth of options for intelligent and user-friendly search capabilities having made a lasting contribution toward raising acceptance of the LEXinform product, as regularly confirmed by customer surveys.

1.2 Product Status Information (PSI)

DATEV offers its members and customers a wide-ranged and specialized support service. Organized as a call center, this company division processes thousands of requests every day. Requests are received by DATEV by phone, by e-mail, by fax and by post. After digitalization of the requests and problem descriptions, these must be automatically qualified and specifically processed. Reaction times must be minimized, response times reduced and efficiency of support services to DATEV members increased.

e:IAS is deployed as a central classification, search and support system to respond to these challenges. An expert system has been developed, using existing experience and knowledge, to provide support employees with concrete solutions in the form of follow-up information.



Source: DATEV eG, PSI – Search and Message Manager

Integrated in a complex workflow of individual processes, e:IAS retrieves for each support request or problem description a selection of potential solutions from an existing casebase of electronically stored experience and knowledge gathered from the DATEV support team. The list of solutions is sorted by relevance so that support employees can rapidly select one or more solutions and incorporate them in a complete, overall solution.

Cross-source searching is of key importance for DATEV's service staff. Alongside a request and error database, e:IAS also integrates other internal sources of information, including:

- A database providing information on changes between product releases
- Help files of DATEV's Windows programs (stored as help tables in XML files)

Further sources of information, such as a printer analysis database, will follow.

In this manner it became possible for DATEV to be able to position the PSI product as a central internal search portal for support information and effectively reuse existing corporate knowledge. Request processing times have been reduced since a large amount of manual searching has become redundant. In addition, the time needed to train new support employees has been dramatically reduced.

Concept-based searching which enables handwritten requests to be used immediately as search texts is also of vital importance to DATEV. Good quality search results, in which the most relevant documents appear among the first five hits, are required for further perfecting answers to written requests. The system can propose default answers which can be used to considerably reduce processing times.

1.3 The DATEV Intranet: A Dedicated Search Tool for Employees

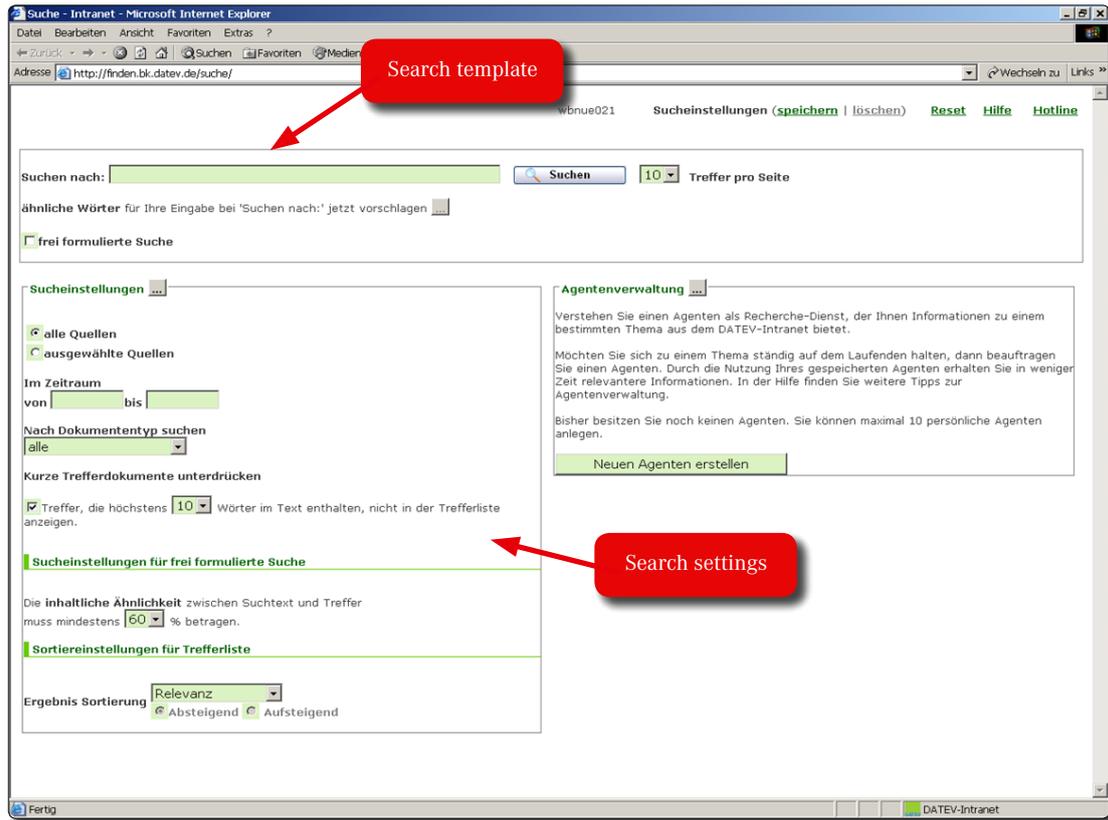
DATEV's Intranet is a highly visible, centralized information hub used by over 5,000 employees. Just like its members and customers, the company's employees are knowledge workers with unique requirements.

The former Intranet search engine was increasingly prone to acceptance problems. Employee surveys revealed that staff was unsatisfied with the quality of search results and ranking procedures. For example, important documents were insufficiently highlighted in search results and searches returned no results if search requests contained spelling mistakes. The number of Intranet search requests fell dramatically and the Intranet system as a whole lost its appeal. From a business and organizational perspective, internal sources of information could not be used effectively. DATEV inevitably had to accept losses in productivity, and, in the absence of a comprehensive central information environment, the quality of the decisions taken by some company divisions suffered.

It was therefore vital to replace the existing inflexible search engine with a new, user-friendly and agile search technology. An internal requirement analysis was conducted in 2004 to identify the areas where the need for action was the greatest. Tolerant searches and intelligent search processes using free-text as search terms emerged as concrete end-user demands. For the Intranet, it was especially important to link up existing sources of information, including:

- Several internal, centrally managed file servers
- Several internal Web sources and Intranet pages
- All public folders and forums from Microsoft Exchange
- Specialist content and information on DATEV products
- Specialist content and information from third parties
- Internal dedicated information systems (HR, marketing, sales)
- Existing authorization profiles

Shortly after completion of the requirements analysis, the decision was taken in accordance with DATEV's Intranet guidelines to replace all existing solutions with a single, powerful and centralized search tool. Due to e:IAS's technological design as a suite of complementary infrastructure components, DATEV was able to deploy the same classification and search technologies in its Intranet that were already successfully used in LEXinform and easily integrate the solution in the existing IT environment.



Source: DATEV eG, Intranet Search Environment

Due to its modular component architecture, e:IAS is capable of successively linking existing sources of information and making them accessible to Intranet users through a homogeneous search environment. The initial use of a uniform search technology triggered synergy effects as project team members were able to draw on the experiences and knowledge acquired in other DATEV projects. This reduced planning and implementation times and led to successful project management.

Following the rollout of the new search technologies, DATEV employees could tap the benefits of a uniform search template, complete with new search methods and much more compelling results displaying the relevance of retrieved documents. In addition, employees could now run their search request in several information sources, which bolstered acceptance of the Intranet as an internal information platform.

2 Interview with DATEV's Project Team Leaders

Detailed interviews, addressing questions on the concrete background of the project, its progression and in particular project satisfaction, were conducted with DATEV's project managers. Highlights of these interviews are reported below.

What were the key motivations for choosing empolis as a solution provider? And what, in particular, were your reasons for choosing the empolis:Information Access Suite (e:IAS)?

Since its creation in 1966, DATEV has continually monitored its customers and competitors to identify new trends at an early stage that can support or extend the DATEV business model. A research and development business unit, directly responsible to the company's development director, was created precisely to focus on such issues.

Our customers (tax consultants, auditors and lawyers) are knowledge workers that we need to support in their every day tasks and decisions. To provide even better support for our members, we clearly needed to intensively tackle the challenges of information classification and retrieval.

During the evaluation of our project, we identified a number of technology and solution providers. Only a handful of relevant providers were included in the actual selection process. We intensively analyzed each company's presentations and prototype systems and assessed their compatibility with DATEV. empolis emerged as the most convincing solution provider, from both a functional and technical perspective. We also had a positive feeling about the company's future prospects. After all, empolis is a subsidiary of arvato AG, part of Bertelsmann AG, the international media and communication group. This led to what both DATEV and empolis considered to be a solid basis for strategic cooperation and partnership.

You use e:IAS as core technology in various DATEV products and company divisions. Which application areas are these, and which concrete goals did you seek to achieve through implementing the technology?

At present, we use e:IAS as an intelligent search component in various configurations to support our LEXinform knowledge product, our Internet and Intranet portals and to process service cases.

Alongside pursuing the strategic goal of continual product development, we naturally also had quite pragmatic project requirements and functional objectives. Then as now, we want to use heterogeneous information structures to provide centralized and user-friendly access to our decentralized sources of data. Thus, the new search method had to deliver, in addition to conventional full-text searches, supported search procedures such as structured or associative searches. Particular highlights of e:IAS are clearly the similarity search and the tolerant search, which are both extremely popular with end-users. For us, e:IAS's further strengths included its platform and language independence and the possibility of linking to any sort of internal or external sources of knowledge and information.

None of these capabilities would have been possible if we hadn't opted for an agile classification and retrieval solution designed as an infrastructure component.

How far has e:IAS technology contributed toward maximizing transparency and promoting regular use of DATEV's information offering? What sort of feedback have you received from your members, customers and employees?

This is a crucial point. Outsiders can't begin to imagine how much knowledge DATEV has accumulated and distributed since its creation. To give you a few statistics: our LEXinform knowledge base contains over 450,000 documents; there are over 2 million pieces of individual information available on our Intranet; and over 13,000 documents can be accessed from our public website. The knowledge base is continually growing. In the immediate future, it will increase considerably due to our various partnerships with external information providers. Furthermore, we operate in complex areas of expertise, including tax and commercial law, which are subject to rapid and dynamic change. DATEV recognized the need for action at an early stage and was able to prepare itself optimally.

As a cooperative, we depend on the satisfaction of our members and the performance of our employees. Thus, our central concern was and remains providing an intelligent way of supporting all knowledge workers with information that contributes to solving specialist problems or improving quality and processes.

We can see increased end-user satisfaction in the regular and active use of our information offering, in the degree and solution quality of independent information acquisition and of course in the sales our over 160 different products. More and more people are attending our training sessions on professional searching, which also contributes to this positive development. Internally, our 5,000 employees increasingly accept and use our Intranet system, as reflected by the growing number of search requests.

DATEV has already been using e:IAS as core technology for some time. What project and end-user experiences have you acquired to date?

We decided in favor of e:IAS in 2004, and our decision began to bear fruit even during the initial phases of implementation. DATEV's project and quality management team rolled out the solution incrementally, following an extensive test phase. Since then, the company has experienced many positive developments, as testified not least by much greater levels of user satisfaction. This has been achieved, among other things, by introducing the associative search together with its raft of supported functions such as tolerant searches, similarity searches and relevance scores in search results. We have been able to offer our end-users compelling search results that add personal value.

A second project phase is currently underway to fine-tune and tailor the system to DATEV's specific needs. While the first project phase involved a reliable 1:1 mapping of our former search technology to e:IAS, we are now focusing on enhancing existing solutions. This involves, in particular, linking additional sources of knowledge and databases and completely removing old and unused technology components. These integration and development tasks have to be reliably coordinated and synchronized with DATEV's general development cycle. In this regard, the partnership and development cooperation provided by empolis is particularly valuable.

e:IAS is an intelligent classification and search technology that can be flexibly deployed across companies. Can you envisage further usage scenarios for this technology at DATEV?

Knowledge transfer was and remains one of DATEV's core competencies. Thanks to e:IAS, we are armed with a highly agile technology that we will further develop for the benefit of our members. For example, we will provide our tax program and LEXinform users with access to even more specialist and background knowledge.

Whenever we provide them with intelligent technologies, our members and end-users also come up with various ideas and requirements. At present, we are primarily working on systematically consolidating e:IAS technology within our core applications. To achieve even better search results, we also want to determine the importance of a given search term within a search query using its proximity to other search terms. We are also planning a new version of LEXinform, which is currently in the project implementation stage.

3 Company Profiles

3.1 DATEV eG

Headquartered in Nuremberg, Germany, DATEV eG, is Europe's only cooperative software company and IT service provider dedicated to tax consultants, auditors and lawyers as well as their clients. The company's business activities focus on providing transparent services in the fields of taxation and economics. The company's service offering spans accounting, business consulting, taxation, enterprise resource planning (ERP) as well as organization and planning. With close to 39,000 members, approximately 5,500 employees and sales of 585 million Euro in 2006, DATEV, founded in 1966, is among the largest information service providers and software companies in Germany and Europe.

DATEV seeks to support the business activities of its members by providing them and their clients with targeted services. DATEV offers wide-ranged services and expert knowledge in data processing, software and consulting, which are custom-tailored to the demands of the tax consulting, auditing and legal professions and quickly and flexibly adaptable to the requirements of its member companies.

DATEV members can freely determine whether they use the company's products on their own PC in tax consultant chambers, in the service data center in Nuremberg, or the two systems in combination with each other. As integrated products, they promote comprehensive data exchange between systems.

The DATEV data center is responsible for providing the functions important for success of a modern communication and logistics center, such as by enabling data to be transferred to external partners (including financial authorities, health insurance companies and banks). The company's own cooperative information network guarantees that communication with the DATEV data center is fast, secure and cost-effective.

For more information, visit www.datev.com

3.2 empolis GmbH

Empolis is the leading provider of information logistics systems. Our software solutions implement and control the efficient and effective flow and storage of information from its point of origin to its point of consumption. By integrating advanced information access and content management, Empolis delivers the right information at the right time to the right people. Based on our award winning platform, our vertical solutions address specific business needs in target industries. These are used, for example, for service resolution management, ecommerce, intellectual property management, on-line media, and risk analysis.

Global companies including Airbus, Bank of America, Bosch, Vodafone, Nokia Siemens Networks, Fujitsu Siemens, Siemens Automation & Drives, Siemens Business Systems, Versatel, O2, Arcor, GE Healthcare, the US marines, Kluwer publishers, the Financial Accounting Foundation, BBC, the European Patent Office and DATEV rely on empolis to deliver the right information at the right time to their employees and customers.

empolis consistently uses open standards, such as XML, Java or OWL and RDF. For many years, empolis has been participating in international public research and development projects, thereby promoting the distribution of core technologies and pioneering new technology in specific application areas. As a full service supplier, empolis is a one-stop solution provider for consulting, development and operation services.

empolis GmbH is a subsidiary of arvato AG, the international media and communications service supplier within the Bertelsmann group. As such, the company is integrated in a unique network of over 270 companies in 37 countries, including printing companies, data storage media manufacturers, logistics and IT service organizations.

For more information, visit **www.empolis.com**

4 Disclaimer and Copyright

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BRAICONN Deutschland - Competence Network

Marie-Juchacz-Straße 4 • D-41199 Mönchengladbach (Germany)
Phone +49.(0)2166.133939.0 • Fax +49.(0)2166.9619916 • E-Mail info@braiconn.com
<http://www.braiconn.com>