

## CASE STUDY



e-Spirit

## Fast-Track Content Management Application Development with Neo4j

**INDUSTRY**

Software

**USE CASE**

Master Data Management

**CHALLENGE**

- Complex data management for major global customers
- High implementation and maintenance effort due to customized solutions

**STRATEGY**

- Seamless data synchronization of portals using graph technology
- Deployment of a mature open source solution and support

**SOLUTION**

- Integration of Neo4j as OEM component
- Graph database as an interface between portals

**RESULTS**

- High user friendliness
- Very high performance
- Automatic synchronization of content in all portals
- Faster development and shorter time to market

FirstSpirit™, the content management system from e-Spirit, helps major global customers to easily create and distribute personalized, dynamic content to various target audiences – on websites, in online shops, and via the Internet. When developing a system for a client, the technology leader turned to Neo4j, using the graph database to connect the CMS seamlessly to existing enterprise portals. Thanks to the OEM deployment of embedded Neo4j, e-Spirit can now minimize support costs and efforts for the client while ensuring data synchronization in all portals. Furthermore, e-Spirit benefits from Neo4j's commercial support and is able to reduce implementation time and effort.

**The Company**

E-Spirit is a leader in enabling companies of all industries to unlock the value of digital content. Using the FirstSpirit CMS, organizations can connect all of their systems, applications, data and content for delivering engaging customer experiences into one central Digital Content Hub. Founded in 1999, e-Spirit is part of the adesso Group with offices in Germany, Austria, Switzerland, the Netherlands, the UK and the USA.

**Challenge**

Leading brands and companies such as Bosch, Media-Saturn, BASF, L'Oréal Luxe, EDEKA, thyssenkrupp, MAN or Commerzbank rely on FirstSpirit to engage their respective target audiences with their messages across multiple touchpoints – corporate website, mobile app, SMS, online shop, enterprise portal, intranet, social media, digital signage or IoT devices. It is crucial that the entire online presence has a consistent look and feel, and that content can be modified on a company-wide level. Often, the same content has to be provided for many different channels, e.g., employee portals, extranets for suppliers, customer-oriented web pages and social media. One major global enterprise, for example, uses FirstSpirit to manage up to 150 different online presences in several different languages. The CMS offers high flexibility and scalability as well as high performance to manage complex, heterogeneous data structures in real time. The company's entire intranet is located on one SAP portal for all employees to look up contacts at the respective sites or check the weekly canteen menu. The system needs to be easy to handle in order to enable all employees – programmers as well as non-experts – to upload relevant content quickly via a user-friendly interface.

e the most suitable for reducing the im-  
he queries as flexible as possible?"  
agement at e-Spirit. The goal was a CMS  
e that could be connected to all conven-  
e-Spirit wanted a straightforward, out-of-  
out replacing any existing systems, thus  
interfaces and programming languages

Neo4j is the leader in graph database technology. As the world's most widely deployed graph database, we help global brands – including [Comcast](#), [NASA](#), [UBS](#), and [Volvo Cars](#) – to reveal and predict how people, processes and systems are interrelated.

Using this relationships-first approach, applications built with Neo4j tackle connected data challenges such as [analytics and artificial intelligence](#), [fraud detection](#), [real-time recommendations](#), and [knowledge graphs](#). Find out more at [neo4j.com](#).

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"Graph databases are definitely among the key future technologies. The high performance of Neo4j that enables queries in milliseconds and the high scalability supporting thousands of queries simultaneously both make it an ideal solution for a wide variety of use cases."

– Christoph Feddersen  
Vice President Product Management  
e-Spirit

were used for developers and end users to work faster and more efficiently, ultimately shortening time to market.

### Strategy

The principal idea was to use the website's tree structure as basis for their CMS. The simplest example of such a structure can be found in the media section of a website, where images, videos and templates as well as their metadata (e.g., author, resolution and size) are managed. As with all file systems, there is a specific directory structure that allows users to quickly and easily navigate the website. "We knew intuitively that this tree structure could be easily replicated with graph technology to create or edit content," says Feddersen, as he remembers the first steps 16 years ago. "Unfortunately, graph technology was not available back then – or at least, we didn't know about it."

Eventually, e-Spirit came across Neo4j and implemented the world's leading graph database in the CMS portal interface. Neo4j has the added advantage that it can be integrated in the CMS as an embedded version. e-Spirit had had positive experiences with integrating software from OEM partners in their solution, in many cases leading to significantly reduced support and overall costs. Neo4j was able to offer such an OEM version.

Another decisive factor was the comprehensive support offered by Neo4j. The graph database developed in Sweden has been used in a wide variety of applications for several years and has been tested in commercial environments. When deploying Neo4j embedded, e-Spirit could depend on a reliable technology that would be self-maintained and self-supported for the foreseeable future. "The database is a central component of the portal interface of our CMS, so we rely on experts," says Feddersen. "With Neo4j, we knew that the product had reached maturity and that we would receive comprehensive support and minimize risk."

It is for these very reasons that Neo4j provides an OEM partner program. With Neo4j as an OEM component, developers can transfer complex data structures to a graph more quickly, start with test versions and still count on the support of Neo4j experts for proof of concept. This shortens time to market considerably. In addition, OEM partners benefit from a flexible pricing model that aligns with technology and business goals. Companies like Pitney Bowes, HP and Serena are already among OEM partners leveraging the high-cache performance, enterprise lock manager, clustering functions, hot-backup functionality, and enhanced monitoring of the Neo4j embedded version for their solutions.

### Solution

In FirstSpirit, Neo4j is used for portal integration and provides the interface between the CMS and the customers' online portals. The graph database ensures fast and reliable data translation to enterprise portals, the intranet or online shops. Relevant content can be distributed via multiple output channels and utilized in convenient formats – on mobile devices, and in the familiar classic portal design.

FirstSpirit is the only CMS that integrates seamlessly with all popular enterprise portals and is certified for SAP NetWeaver, IBM WebSphere, Liferay, Microsoft SharePoint and Red Hat JBoss. "Our great strength lies in using content multiple times and distributing it on various portals," says Feddersen. "If an image is published on the corporate website or e-commerce platform, it can also be used on other channels. Editors can see at a glance in which portals the image is being used, which rights are associated with it, whether it has been modified, or whether it can be deleted – all the information is stored in the graph."

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## Results

The OEM deployment of Neo4j has some significant benefits for e-Spirit. Unlike stand-alone solutions, customers don't need to install and configure the database on an additional server and update the configuration parameters in the CMS. "Neo4j is an integral part of FirstSpirit portal integrations," says Feddersen. "Organizations can use the CMS intuitively, which is often key when choosing a solution." Since e-Spirit developers preconfigure the database specifically for each client, organizations receive an out-of-the-box solution that can be used without further adaptation. This dramatically reduces cost and effort.

Neo4j's graph structure means changes can be tracked quickly and easily, i.e., it is possible to identify changes of attributes and nodes. Updates are forwarded automatically. Instead of searching the portal periodically for any changes, customers are informed about them proactively. "This functionality is already included in Neo4j. It's basically an added benefit of the graph database," says Feddersen. "The result is that our customers' web presence is consistent on all channels."

The greatest advantage of Neo4j for e-Spirit, however, is the graph data model. Since the data is already available as a graph, there is no need for tedious logic implementation in the CMS — the data model can be kept persistent and queried as it is. Neo4j is used to make the structures in FirstSpirit accessible so that another developer can build the same structure in the SAP portal. "From the developer's point of view, we save a lot of time and can shorten our time to market," says Feddersen.

## Outlook

e-Spirit is drawing on its initial experience with graph technology for portal integration and will use Neo4j in other modules as well. Possible use cases concern recommendation engines, which display personalized ads on websites in real time, click behavior analytics or the connection to other systems, such as the CRM. Feddersen, however, does not want to reveal anything more specific yet. "But what I can say is that the graph database is definitely among the key future technologies. The high performance of Neo4j that enables queries in milliseconds and the high scalability supporting thousands of queries simultaneously both make it an ideal solution for a wide variety of use cases."

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