Information Management Survey 2018

Trends and Insights for Data and Knowledge Professionals
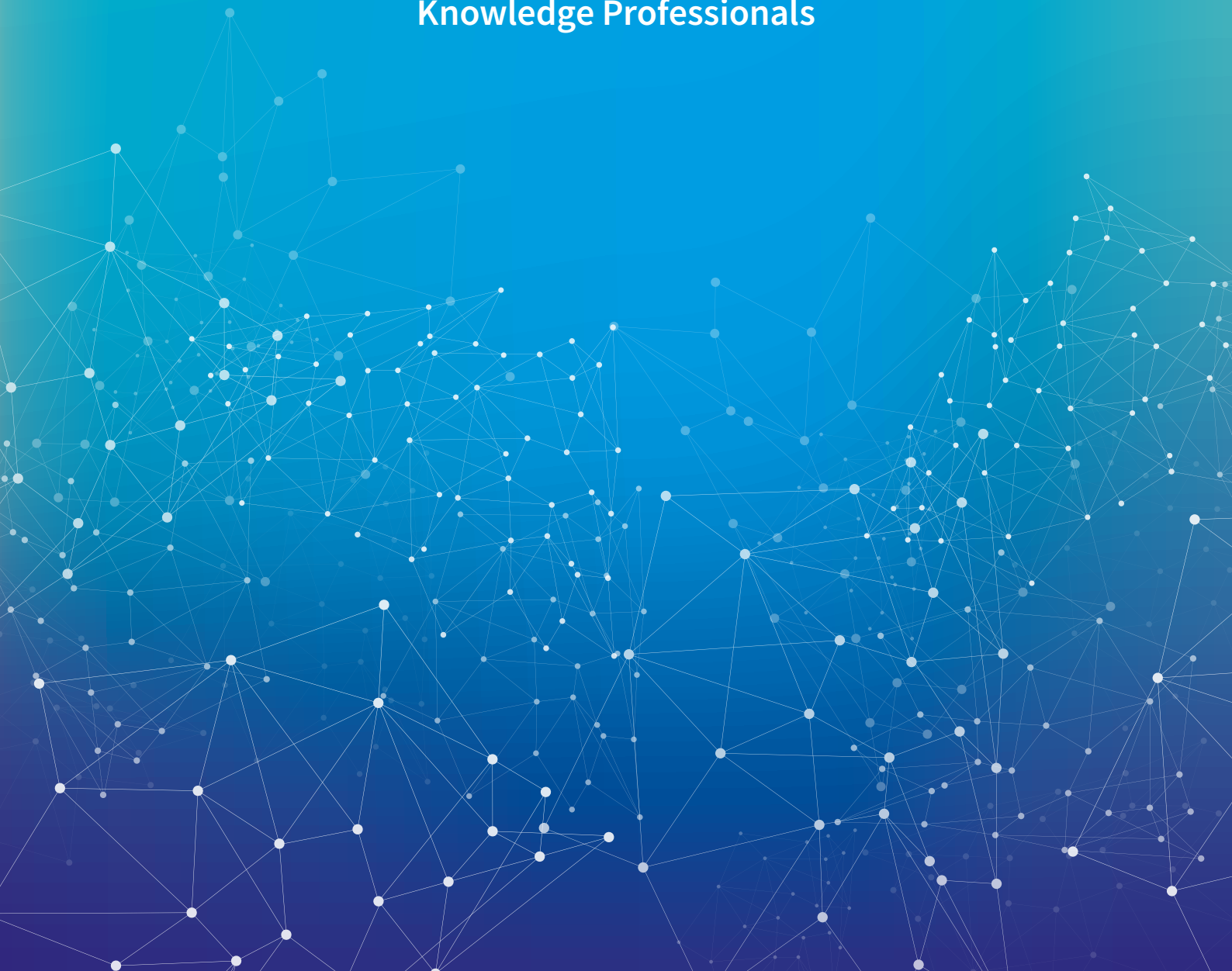
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Preface

The professional field of information management experts is very heterogeneous: Different educational and experience backgrounds of data and knowledge management experts, various generations of information professionals and the diverse demands of rapidly changing industries make it tricky to evaluate a status quo of this technology domain.

In the past, rather academically oriented surveys have been executed, which provided limited insights for practitioners. The Information Management Survey 2018 is a joint effort of leading knowledge engineering companies. This cooperation enabled us to get access to a highly diverse professional group that represents the market we are operating in.

187 people contributed to this survey. Taxonomists, content strategists and enterprise information architects might have different focus areas, but they all agree on the key role of information management to deliver smart applications. The most alarming result is that every second respondent thinks that organizations don't understand the role and contribution of information professionals. At the same time, 67% of the survey participants see the demand for their expertise rising. We need a better alignment of the business and technology side. Technology professionals know how to deliver cognitive solutions, but they need a working environment that provides them with a leeway for innovative approaches and interdisciplinary collaboration within and beyond the IT ecosystem. The C-level doesn't buy technologies, they focus on results. Information management professionals need to stress how their share of work is contributing to better applications.

Even more important, we need to showcase which kind of software solutions are only possible based on semantic metadata management. Once decision makers understand professional information management as key differentiator, we will face a crucial game changer in the development of AI-driven applications.

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Semantic Web Company	Enterprise Knowledge	Mekon	Semantic Web Company

Executive Summary

187 people worldwide participated in the Information Management Survey 2018. It is the first survey which was targeted to a global community of information professionals with practical experience. Here are the Top 7 findings:

1. **Information Management is a very heterogeneous and interdisciplinary domain**
   The Information Management field is very heterogeneous. Professionals with similar skills and experience backgrounds have a variety of job titles. This indicates that the actual job profiles can strongly differ depending on the organization or geographic region. At the same time, we observe a better alignment between knowledge, data and content experts. They pay attention to each other's expertise and try to combine the best of those worlds in order to provide smart and dynamic applications.

2. **Demand for information management professionals is exceptionally high**
   67% of the survey respondents state that they see the demand for their expertise rising. At the same time, every second participant agrees that organizations don't fully understand how information professionals contribute to the development of smart applications. Organizations don't know specifically how to solve complex cognitive computing challenges. Companies are willing to employ information professionals when they succeed to explain how their share of work will significantly improve the functionality of smart applications.

3. **Hands-on experience matters more than formal education**
   The education level of information professionals is very high. 58% have a related university degree. However, the career progression is rather defined by the available project opportunities and access to enterprise knowledge engineering solutions. The technical skill enhancement is very relevant, but is basically part of the daily job.

4. **Digital maturity of an organization depends on the availability of enterprise knowledge engineering solutions**
   27% of the participating organizations in this survey have licensed enterprise knowledge engineering solutions. The usage of in-house developed tools or open source tools is with 15% comparatively lower. 4% of the companies have already started to work with machine learning and document classification solutions.

5. **The development of digital products is the main driver of the increasing popularity of knowledge engineering**
   Use cases for knowledge engineering are manifold. Internal motivators for professional semantic data management as data integration due to the replacement of IT-systems, merger and acquisitions or organizational restructuring are secondary. Companies are willing to professionalize their data management when it has an immediate impact on customers. 42% of the survey respondents are heavily including knowledge engineering in the development process of customer facing smart applications.

6. **Western Europe is more experienced in knowledge engineering than Northern America**

   Western European companies tend to use more frequently enterprise knowledge engineering solutions than North American organizations. The usage of in-house developed tools and Excel sheets ist still more common in the US and Canada. Also in regards to establishing new forms of collaborative project groups, Western European companies are at the forefront. 22% are investigating how they can better organize the cross-functional and interdisciplinary work.

7. **Machine Learning and NLP have a big impact on the further development of knowledge engineering**

   Machine Learning is currently the most popular technology trend. Even more important, it gets heavily applied. Comparatively, Natural Language Processing is a more established IT field and continuously developed and integrated with knowledge engineering processes.

Survey Demographics

This survey was executed by Semantic Web Company, Enterprise Knowledge and Mekon – leading companies in the field of semantic technologies and knowledge engineering. 187 people responded fully to the online questionnaire between September and November 2017.

## Survey respondents by geographic region

Most of the participants are from North America and Western Europe. This enabled us to make a geographic comparison of the survey results and provided insights how information management differentiates between those two regions.

East Asia, Australia
6,6 %

Didn't answer
4%

Other
13,7 %

Western Europe
34,6%

North America
41,1%
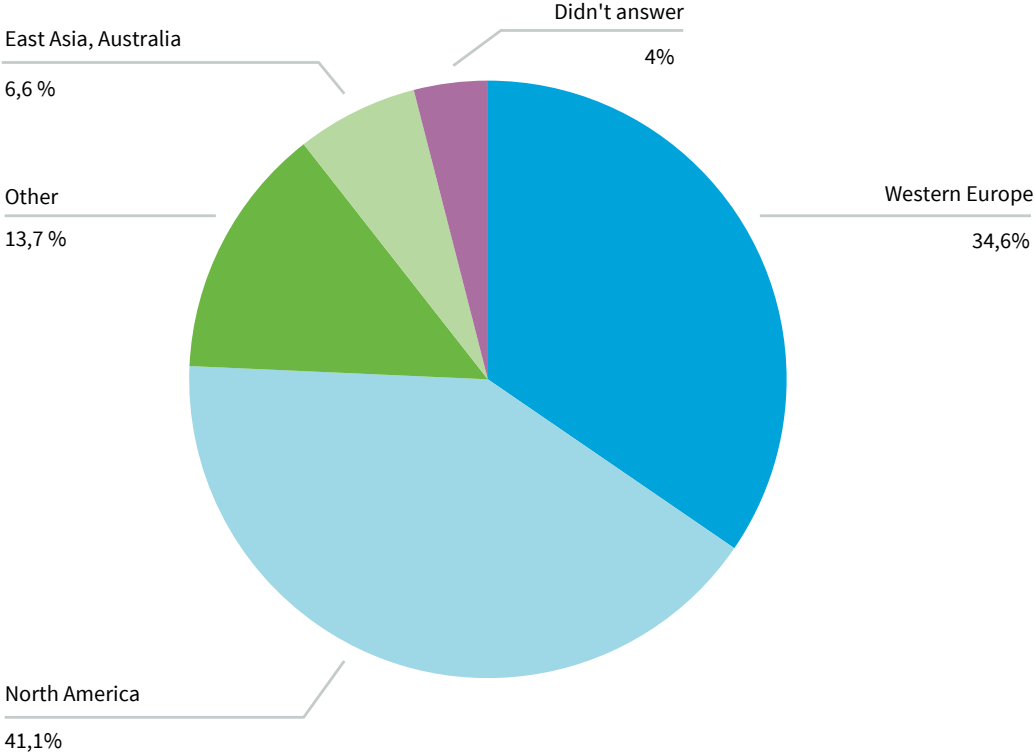
Survey Respondents by Geographic Region
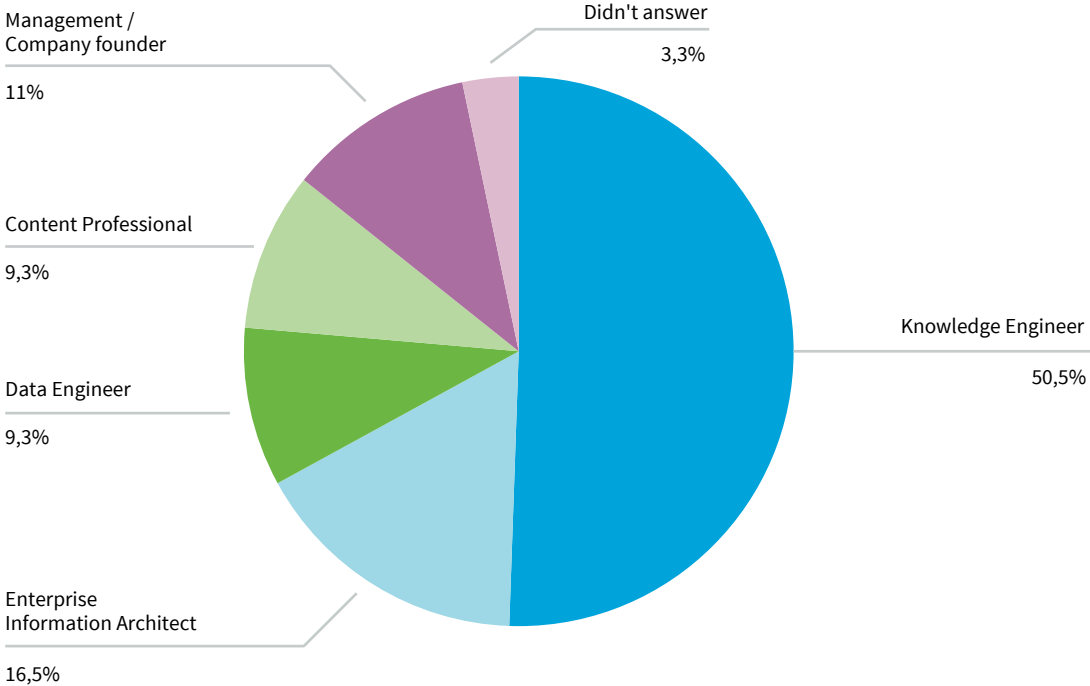
Survey respondents by industry

A majority of the respondents is working in the Consulting & IT industry. We assume that many survey participants work in other core industries as well, which they support with their IT expertise. However, those industries were not selected in the questionnaire. Generally, the represented industries are known to be the pioneers of applied semantic information management.
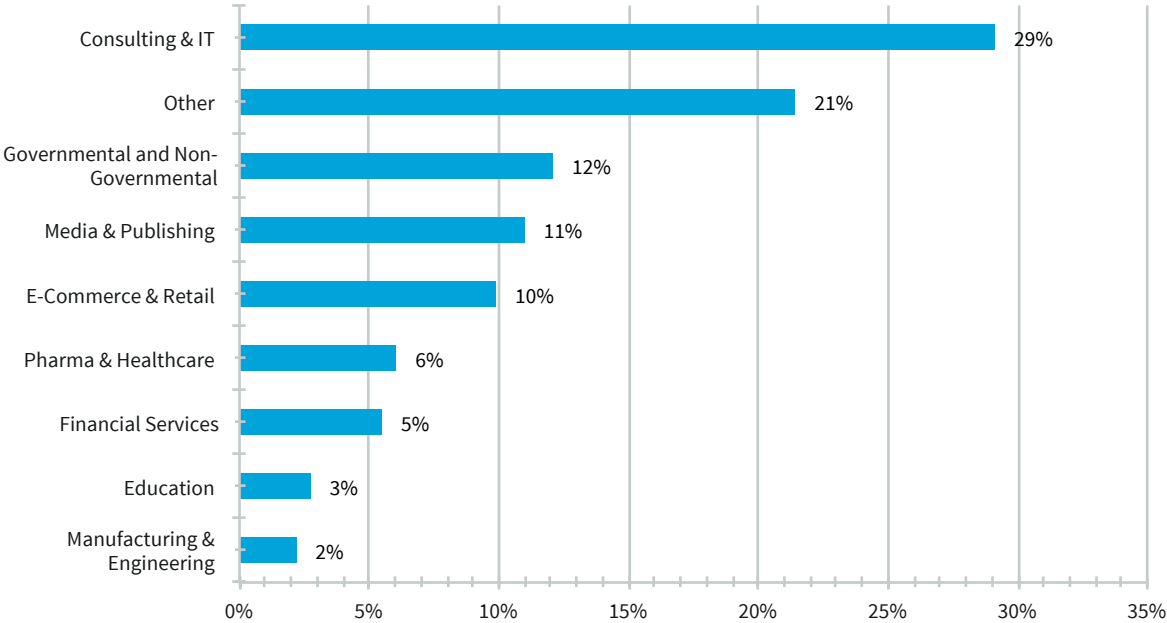
Survey respondents by industry

Survey respondents by professional role

The survey included an open question in regards to the official job title and an additional question where multiple suitable job titles could be selected. Almost every survey participant had a unique job title, which they additionally matched with multiple pre-given answer choices. This result proved our hypothesis of a very heterogeneous, but strongly related professional group. Based on the available information, we decided to cluster the survey respondents based on their most dominant skills and daily job responsibilities.

Management /
Company founder

11%

Content Professional

9,3%

Data Engineer

9,3%

Enterprise
Information Architect

16,5%

Didn't answer

3,3%

Knowledge Engineer

50,5%

Survey respondents by professional role

This word cloud is generated from the open answers of the questionnaire:

Survey respondents by experience level

The majority of the survey participants exhibit more than 10 years of experience in the field of information management. This highlights the high degree of specialization of this professional group. 30% of the survey participants belong to the "next generation" of information professionals, which allowed us to provide a generational comparison on various topics as technology trends or the organizational embeddedness of knowledge engineering.

Survey respondents by experience level

Profiling Information Management Professionals

'Information management professional' describes a broad category for a large group of experts that is dedicated to consolidate structured and unstructured content. Irrespective of technology trends and marketing buzzwords, these experts focus on building data models, annotate content in a consistent manner, integrate available data in workflows and make information searchable and actionable. The survey results clearly indicate that more than half of all survey participants have a university degree in information management. Equally high is the percentage of people who got involved in knowledge engineering related projects and started to explore and develop their expertise by hands-on experience. Formal learning plays a subordinate role in the career progression of information management professionals. It is practical experience that enables information management professionals to work with large data sets and enterprise knowledge engineering solutions.
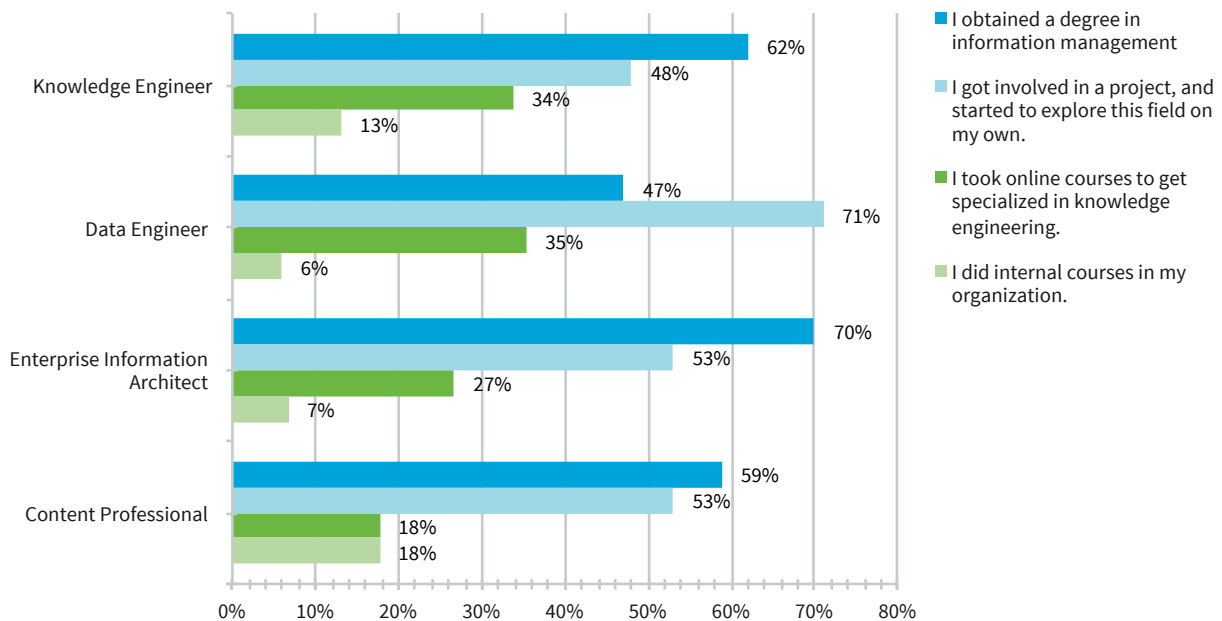

What is the professional background of information management experts?

Especially less technical roles such as content professionals or knowledge engineers want to develop their technical expertise. Interestingly, content professionals focus rather on basic programming skills. Not a single content professional mentioned his interest in knowledge engineering tools. It can be assumed that this community has not much experience with knowledge engineering. Therefore, content professionals don't know how their expertise could benefit from exploring this IT-field.

At the same time, more insights into the subject matter are of greater importance to those experts that are closer to the business side. Due to their role their awareness for the subject matter might be more developed than it is the case with more technical oriented professionals.

Depending on the professional role the scope of learning needs differ. Reading online journals or attending conferences enable professionals to stay up-to-date on technology and industry trends. This kind of knowledge transfer is especially appealing to data engineers. As data science and its affiliated disciplines are a fast-paced field, it is essential for daily work to incorporate this new kind of knowledge.
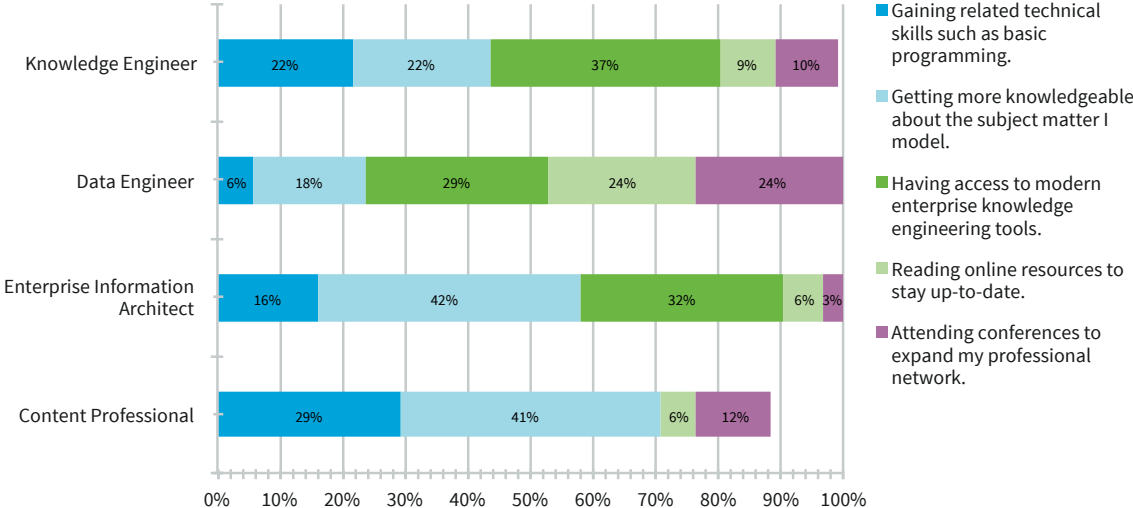
What supports you most in improving your professional profile as information expert?

When comparing the relevance of skill enhancements by level of professional experience, we get slightly different results. The development of technical and subject matter expertise is more relevant at the beginning of an information management professional's career. For almost every third person – irrespective of experience background – the access to enterprise knowledge engineering solutions is key to improve the personal professional profile. More senior professionals focus rather on extending the professional network and stay up-to-date on technology and industry trends.
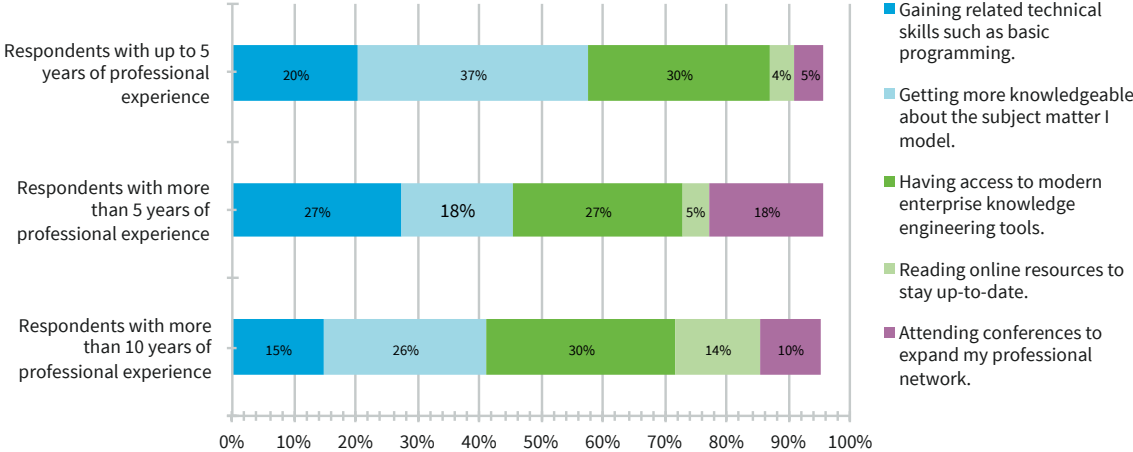

What supports professionals with different experience background in improving their professional profile?

The overall mood in this highly interrelated technology domain is exceptionally positive. 67% of the survey respondents indicate that the demand for their expertise is rising at the job market. However, it is rather the more technical roles that benefit from this development. Only 47% of the content professionals claim the same for their specific domain. This might also explain why content professionals are especially interested to extend their technical skills. At the same time, 54% of the survey participants state that organizations don't clearly understand the role of information professionals. This paradox might be solved by the information management professionals themselves. The variety of their job titles showcase that they know how to adapt their experience and skill sets to organizational demands.

The Organizational Embeddedness of Knowledge Engineering

More than every second survey respondent agrees that organizations don't really understand the role of information professionals. Only 5% indicate that they have full support from the top management. When comparing the results by professional role, it becomes clear that the perspective in this regard strongly differs. Highly specialized data engineers as well as the top management only agree by 35% with it. It's the intermediaries as knowledge engineers and enterprise information architects that obviously face practical hurdles in their field of responsibility. Strikingly, 94% of content professionals don't see their profession clearly supported and embedded in the organization. As their job profiles evolve and require a more technical outlook, we might face a transition period in organizations that lead to new team structures and responsibilities.
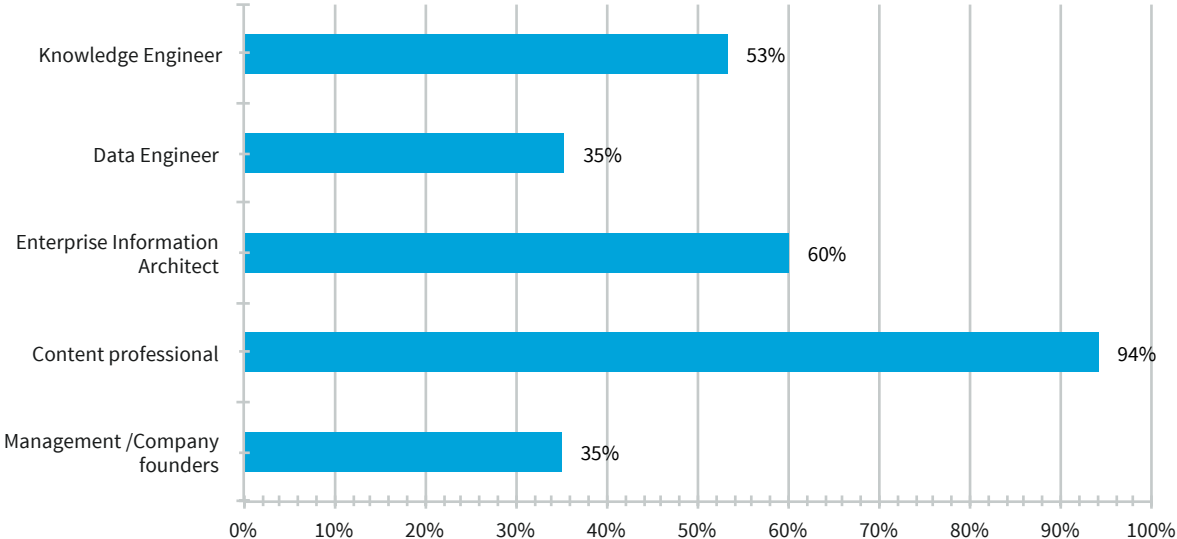

Many organizations do not clearly understand the role of information professionals.

The maturity degree of an organization in regards to its digital services and products is reflected by its technical infrastructure and team constellation. Obviously, companies that employ highly specialized information professionals are already at the forefront of digital development.

However, the work environment can substantially differ. In companies where the top management has an expert background in information engineering or enterprise information architects are employed, commercial taxonomy tools significantly exceed the usage of in-house developed or open source tools, as well as excel sheets. Knowledge and data engineers have to rely more often on alternative solutions than a professional technical setup for their share of work. On the other hand, they belong to the privileged group of professionals who have the freedom of exploring new methods, approaches and tools. Solutions for machine learning and classification start to become relevant and get explored by those technical experts. Content professionals have due to their less

technical focus also a different work environment. Interestingly, every third works with Excel and only 12% have access to a commercial taxonomy software. Especially content experts would highly benefit from using professional knowledge engineering tools, which doesn't require sophisticated technical skills in the beginning.
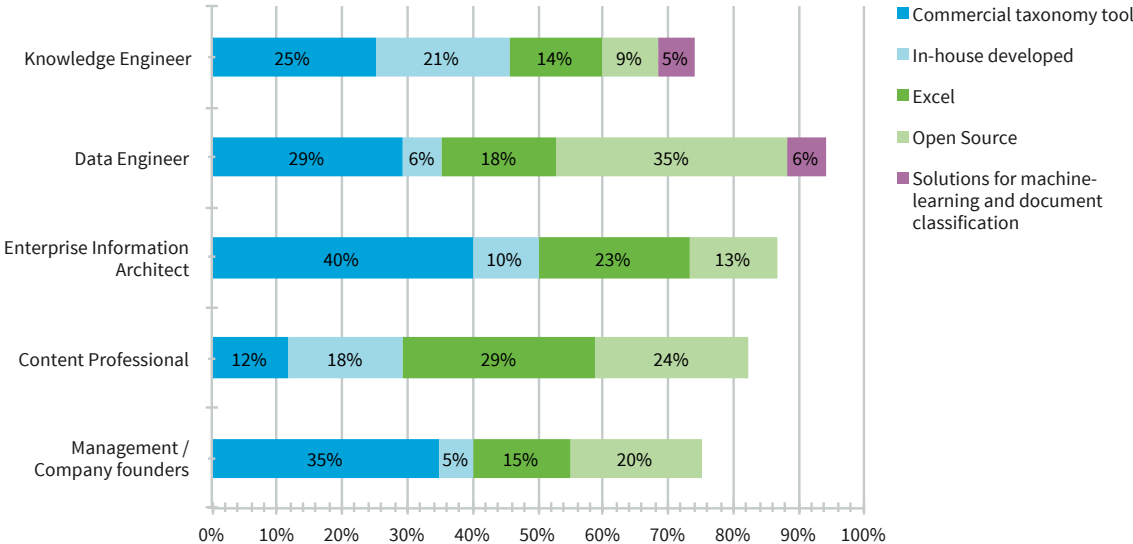

Which tools and solutions are used for knowledge engineering in your organization?

The technical set-up in organizations is also influenced by the experience level of information professionals. Senior experts are better equipped with enterprise knowledge engineering solutions than less experienced colleagues. At the same time, the new generation of information professionals benefits from the pioneering work of their predecessors. Almost a third of the information professionals, who are at the beginning of their career, already start working with an enterprise knowledge engineering software.
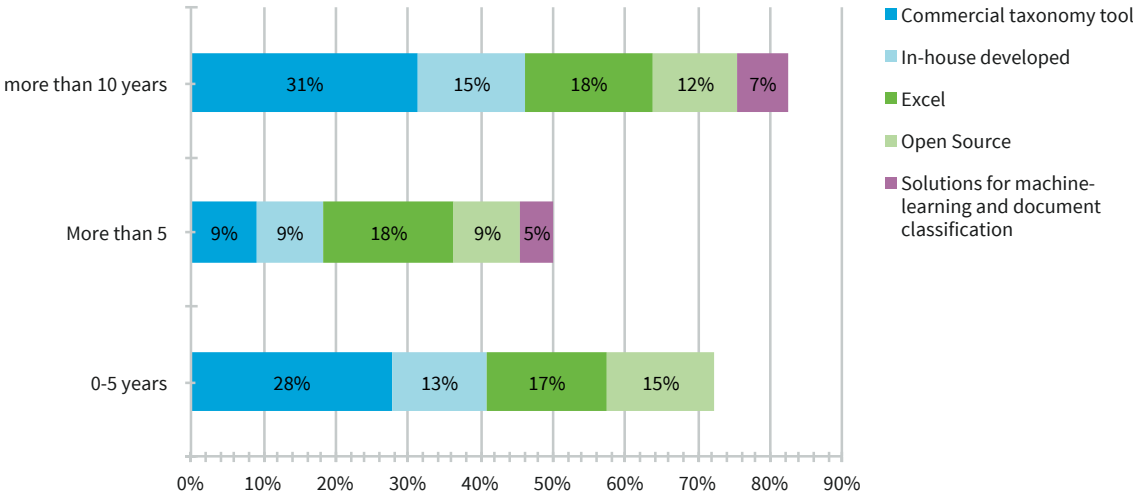

Usage of tools and solutions for knowledge engineering by experience level of information professionals

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Western Europe is slightly more advanced in the adoption of enterprise knowledge engineering solutions. The usage of excel sheets is still more dominant in Northern America. Strikingly, the inclusion of open source tools is better accepted in Western Europe.
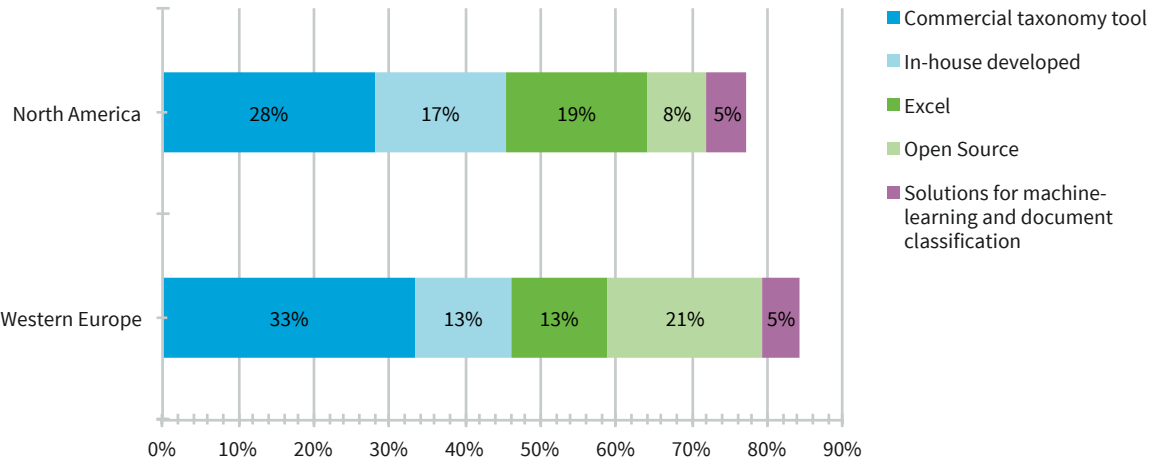
Usage of knowledge engineering tools and software by geographic region

In Western Europe also 22% of the companies which participated in the survey explore new ways of interdisciplinary collaboration. They have established project groups that are responsible to drive the knowledge engineering efforts of the organization. In the US and Canada, only 13% of the survey respondents have adopted a more streamlined approach to embed information professionals in key processes around various IT developments.
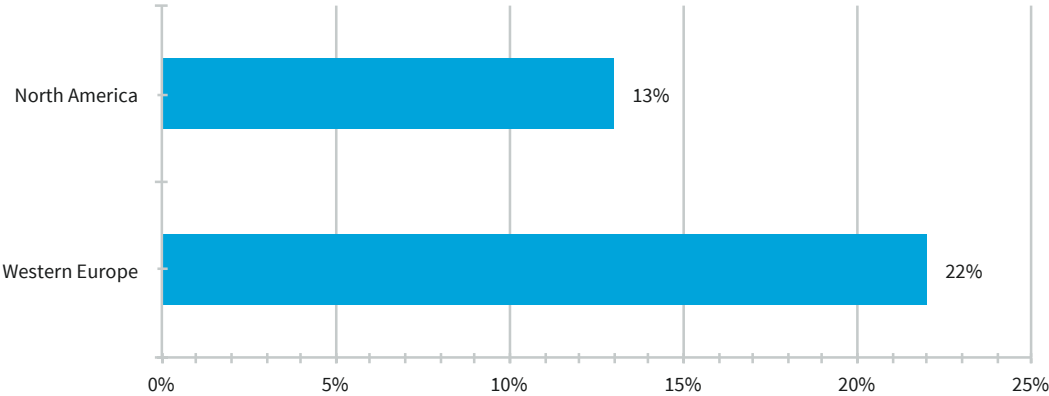
We have an established project group that drives the knowledge engineering efforts in our organizations.

A majority of companies embrace knowledge engineering initiatives due to the development of new digital products. The increased demands in complexity of smart applications require sophisticated knowledge models. Organizational reasons such as restructuring or the replacement of IT-systems are also drivers of the adoption of knowledge engineering methods and tools. Merger and acquisitions

are frequently mentioned for use cases where knowledge engineering might be key. In practice, the data integration seems to be done rudimentary in a first step. It's rather external factors such as the high expectations for digital customer products that make a difference if knowledge engineering gets included in an IT project or not.
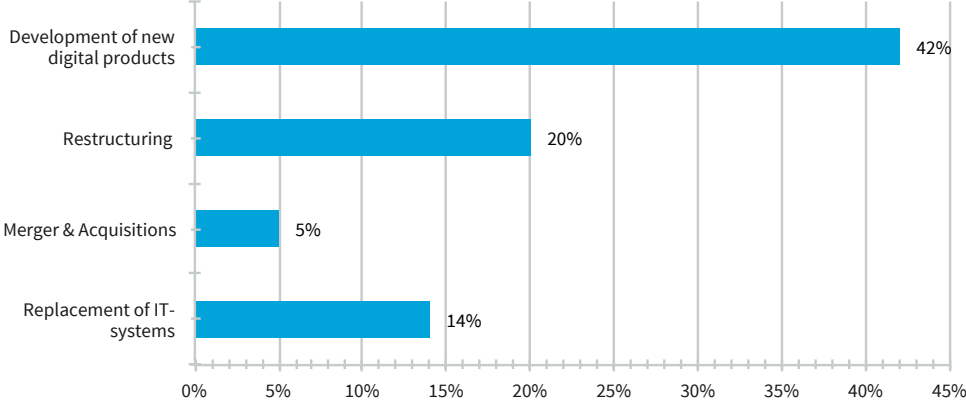
What is driving knowledge engineering initiatives in organizations?

We asked in the survey which applications are enhanced by knowledge engineering methods. This question provided us with insights which functionalities of applications are at the focus of digital initiatives. It also reflects in which use cases different professional roles have to cooperate more closely. Knowledge engineering is an integral part of content recommendation, the enhancement of search capabilities and data integration tasks. Content professionals are especially important in content heavy projects. Knowledge engineers, data engineers and enterprise information architects are working closely together to deliver cognitive applications. Helpdesks, which should be interpreted as an umbrella term for question / answering applications are just starting out on a large scale.
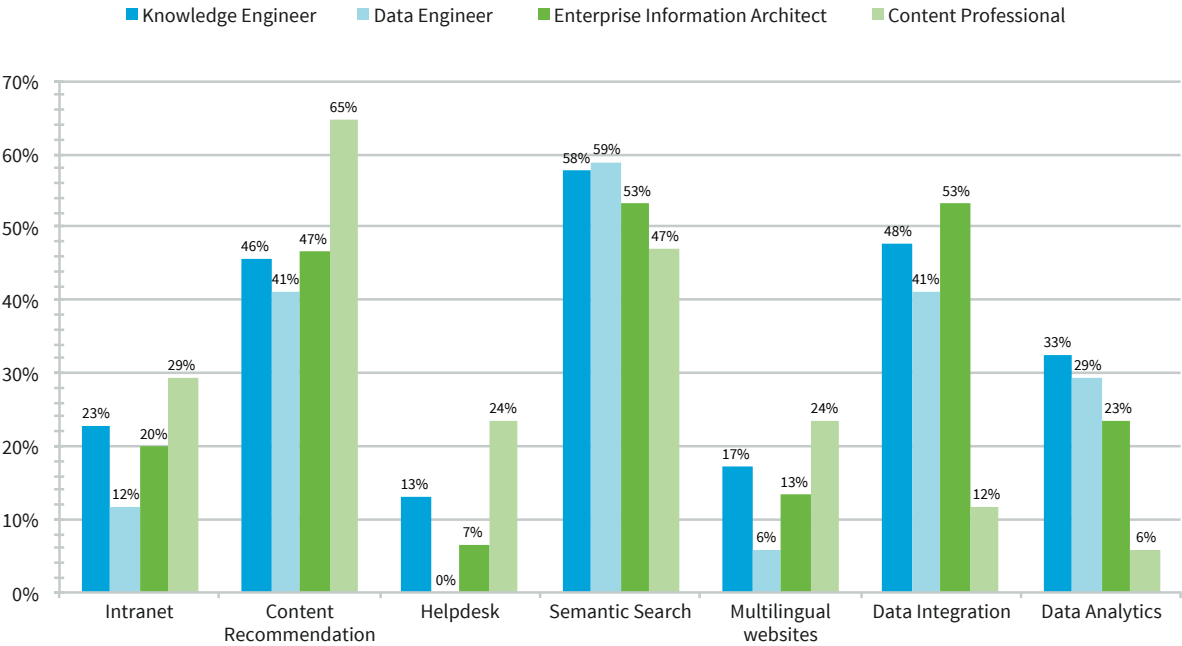
Which applications are enhanced by knowledge engineering approaches in your organization?

Technology Trends in the Field of Artificial Intelligence

Artificial Intelligence is derived by a variety and combination of technologies. Obviously, the professional role is crucial for which relevancy is attached to various technology trends. All information management professionals agree that machine learning is central to the future development of smart applications. Surprisingly, content professionals are with 53% overrepresented with this opinion as compared to knowledge engineers, data engineers and enterprise information architects. We assume that the more technical experts answered this question in regards if they already apply machine learning or not. Also cognitive computing is with 45% outstandingly important to the top management. In this case, a business orientation might have an impact on the answer. It is less surprising that for data engineers Big Data continues to have a substantial impact on their work. Applied NLP is rather relevant for knowledge engineers.
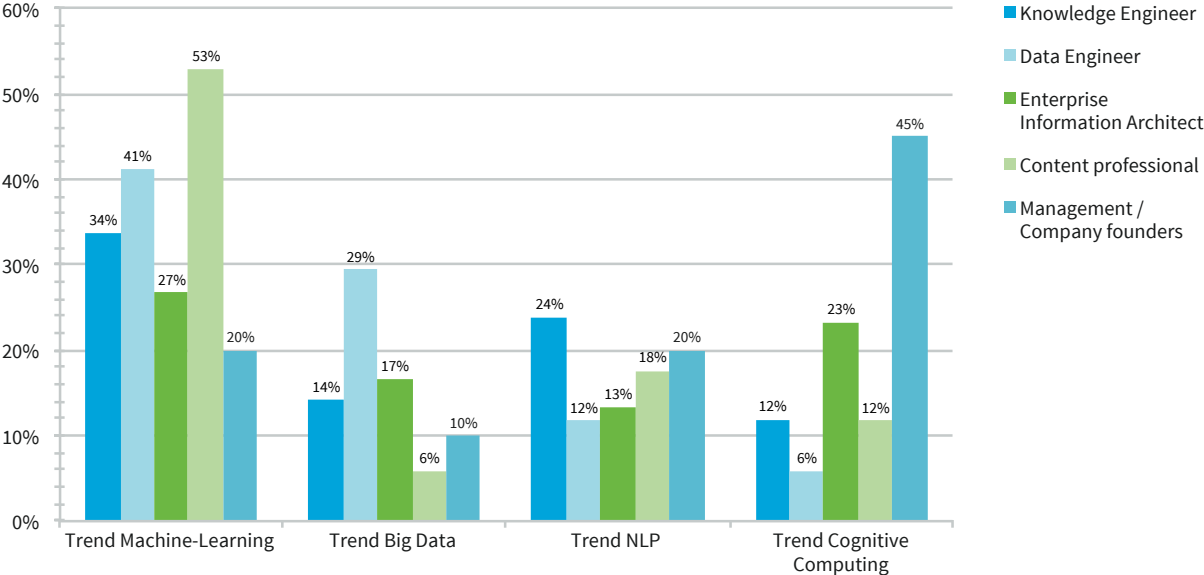

Which technology trends are most relevant to you?

There are also slightly geographic differences which technology trends are more relevant. Western Europe tends to work already more intensively with machine learning. Northern America relies more on "established" technologies such as NLP and is focusing towards cognitive computing. Indeed, borders between technologies become blurred.

Which technology trends are most relevant to you?
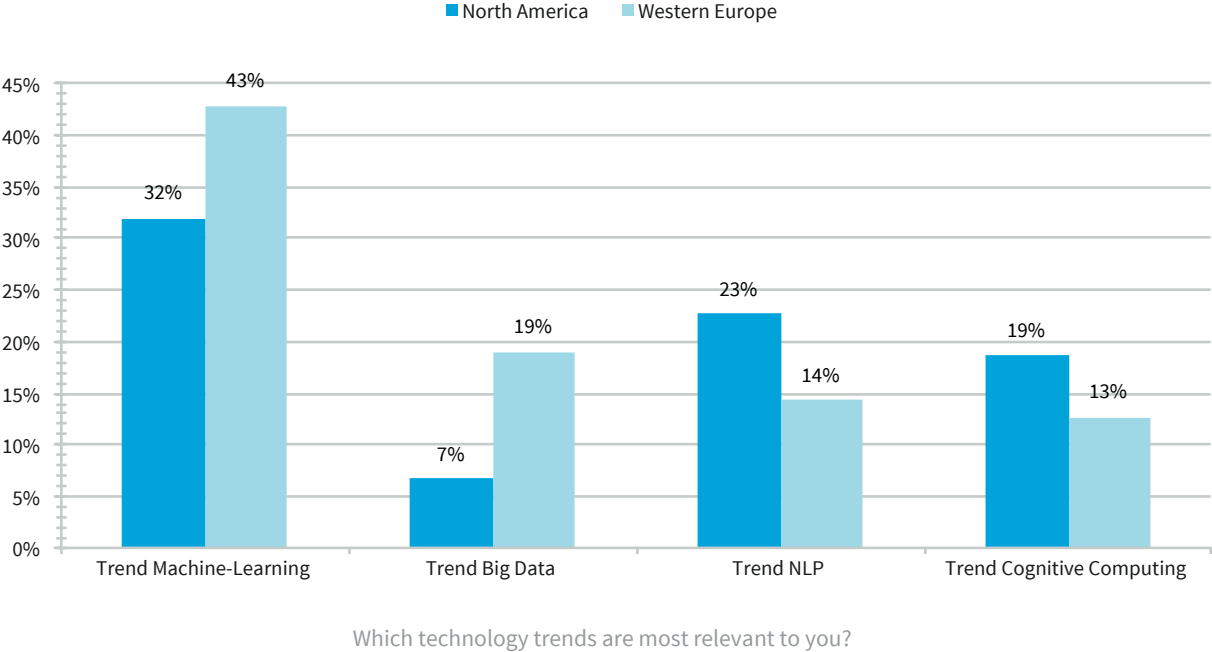
The familiarity with knowledge engineerings standards such as SKOS and OWL is very high across all professional roles and geographic regions. 71% of all respondents are acquainted with the standards. This proves that standards-based technologies are fundamental for the future of smart applications.
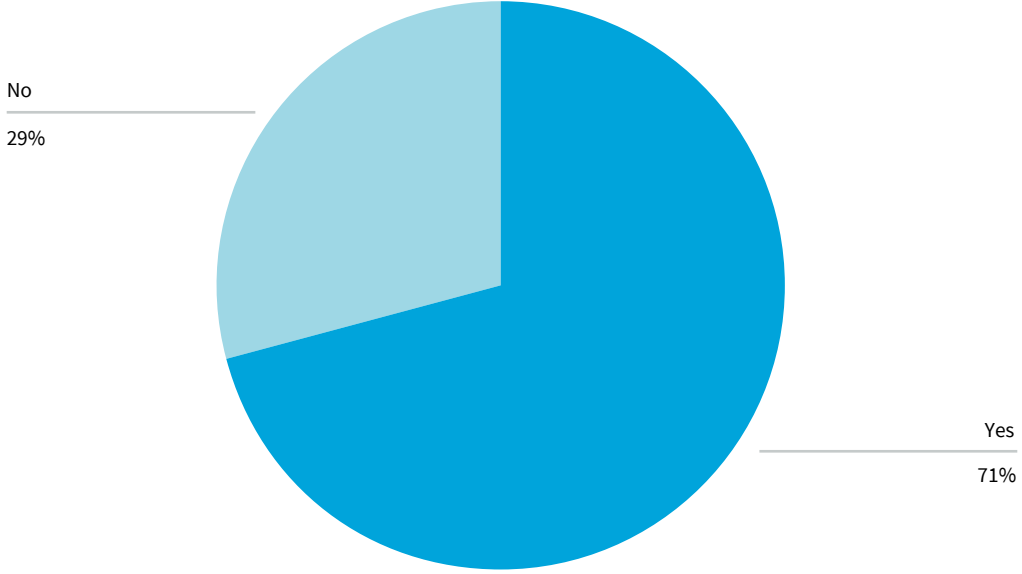
Are you acqainted with semantic technology standards as SKOS and OWL?

Further Resources

This Information Management Survey indicates that various IT disciplines and related subject matter fields start to cooperate in order to deliver cognitive solutions. We have collected some ressources for you that will support you in broaden your perspective on knowledge engineering and cognitive computing.

Free Semantic Web Online Certification Training

Register for a free certification program at PoolParty Academy. You will get introduced to the basic methodology and concepts of semantic technologies. The training also includes a discussion of business use cases and demonstration of enterprise knowledge engineering solutions.

https://www.poolparty.biz/academy/

Free Knowledge Base about Information Engineering

Explore the knowledge base of the consultancy Enterprise Knowledge. 20 consultants share regularly their project insights and conceptual approach how to enhance cognitive applications by knowledge models.

https://enterprise-knowledge.com/knowledge-base/

Free monthly bulletin on metadata and structured content

Learn about fundamental metadata principles, advanced delivery applications, and in particular, structured content in Mekon's monthly newsletter.

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