Results of the ZKI Top Trends Survey of the ZKI Strategy and Organisation Working Group for 2023

Malte Dreyer[1]

[1] Humboldt University Berlin, Germany
malte.dreyer@hu-berlin.de

Abstract

The Strategy and Organisation Working Group of the ZKI Association[*] conducts an annual survey[†] on the most important topics and trends of IT institutions from universities and research institutions in Germany. The survey results are intended to help keep an eye on important developments, topics and best practices and to keep pace with the fast changing topics of digitalization. It also helps to monitor the rapid change of technologies for one's own institution.

The core survey addresses the most important topics and changes in the current year in a standardised way. In addition, an individual focus is put on questions about a certain topic each year. In 2023, the focus questions were in the area of changes due to the energy crisis for IT facilities: Furthermore, the models for IT governance implemented at the organization are asked for.

The survey is completed by CIOs, data centre managers, IT directors and people in similar roles. This article presents the results of the 2023 Top Trends Survey.

Summary

Since the pandemic, university IT centres have been increasingly challenged to expand and develop their range of services, to balance them according to demand, and at the same time to strengthen structured operational management, compliance, IT security and data protection. Information and IT security are the most frequently mentioned answers across all questions. In terms of trends, as well as strategies, investments and technologies or the involvement of external service providers, IT security is the topic with the highest attention. In this context, other facets such as the involvement of security service providers, protection of clients (EDR), new firewalls, multi-factor authentication, external

---

[*] https://www.zki.de/

[†] The results of the top trends survey 2022 can be found at https://doi.org/10.5281/zenodo.7599926 The results of the top trends survey 2021 can be found at https://doi.org/10.5281/zenodo.4775115

consulting and improved emergency planning are also mentioned. The lack of skilled workers, as an external factor, and staff shortages, as a lack of strength to implement the requirements, are also mentioned more frequently this year across all question categories than in any previous year. As a result, there are also more concrete measures in the answers than in previous years to meet these two challenges. In addition, the topic of digital sovereignty as a strategic topic has become very important: not only as part of IT risk management as a whole, but also for the re-evaluation of the solutions in place or for the detailed assessment of their data protection characteristics. On the other hand, top issues from previous years such as research data management, virtualisation, data protection and support for mobile working may now have been integrated into the operational structures of the IT centres to such an extent that they are no longer cited as separate trends.

Digitalisation, digital transformation and digitalisation of the administrative processes, on the other hand, are trends that are reflected even more intensively in the responses than in previous years. In addition to concrete digitalisation measures and individual solutions, more strategic activities are also mentioned in this context - such as the development of digitalisation strategies, planning of digitalisation governance or also the redesign of structures for digitalisation.

Since the pandemic, more responses show more engagement with cloud services and cloud technologies as a top trend. This year, cloud use is also increasingly mentioned in connection with infrastructure services (IaaS). At the same time, in addition to questions of digital sovereignty, the question of data protection in cloud solutions is also addressed in many responses. This explicit focus of answers in the cloud context did not exist in previous years.

In terms of legislative regulations, the implementation of the Single Digitale Gateway (SDG) continues to top the list of mentions, followed by the GDPR and the issues of data protection in cloud solutions. A new addition is the Energy Efficiency Act (EnEfG), which is still in the process of being passed and which may also affect IT centres at larger universities. The possible successors to the Safe Harbor Agreement are also eagerly awaited in order to obtain more clarity for the use of cloud services.

When it comes to strategic issues, there is more room for strategic and planning activities along the end of the pandemic. In addition to compliance activities and IT security structures, the renewal of the IT infrastructure, the introduction of IT architecture management and the creation of an IT strategy and IT governance are frequently mentioned.

In the management field, project management methods or the introduction of formal methods or training for more methodological awareness are the most frequently mentioned topics this year. The topic is followed by the field of personnel recruitment in the course of the shortage of skilled workers.

External services have again increased in relevance, e.g. for services and consulting on IT security and for consulting in general. This year there are especially more mentions for the involvement of external service providers in the area of general operations and for infrastructure components.

When asked about increased investments, the topic of IT security is also the top answer with 27 mentions.

Among the newly introduced technologies, security technologies, MFA, signature management, zero trust and EDR together are by far the most frequent response, in addition to general cloud trends. But virtualisation, containers, software defined networking, Kubernetes and IaaS also show where the journey is heading in terms of cloud technologies.

In terms of skills to be built up in the next year, project management is mentioned most often. This may go hand in hand with higher project workloads and the need for more professionalisation and efficiency in projects. Awareness of IT security as a skill to be built up is in second place among the responses. IT service management is frequently mentioned and is also to be found in the environment of professionalisation in third place.

In terms of the most important skills for employees, after the top answer "communication skills", "awareness of IT security" and "project management or process thinking" are named - even before the technical aspects. This reflects the trend this year of being able to better meet the increased requirements

for compliance, operational management and plannability for building new solutions by building up more methodological awareness for project management and processes.

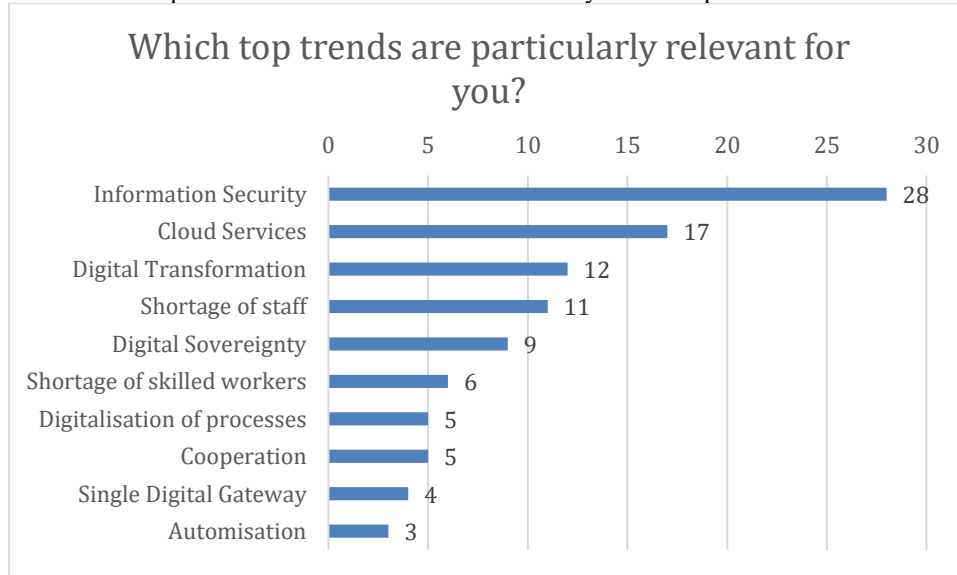The relevant top trends in 2023 for the ZKI community are the topics:

Figure 1: Relevant top trends -113 mentions from 40 institutions

The survey asks on the one hand about general IT trends and on the other hand about trends that are particularly relevant for the own institution (cf. Fig. 1). The trends with the highest relevance for the institutions are shown here. Since the surveys during the Corona pandemic, the statements of general trends and relevant trends have become very similar. This can possibly be seen in connection with a higher pace of expansion and change, because in the surveys before the pandemic there was a greater time lag between general and relevant trends of several years.

1 Special focus in 2023

After the challenges posed by the Corona pandemic in previous years, in 2022 the energy crisis has created new issues for IT centres at universities. Therefore, for this survey, a focus was placed on the changes brought about by the energy crisis for IT facilities. The questions were

- What measures have you taken in the environment of the energy crisis?
- How does the energy crisis affect your operations?
- Which of these measures will you keep in the foreseeable future?

The responses revealed a particularly broad spectrum of measures, ranging from reducing the room temperature or replacing light bulbs to the increased configuration of energy-saving options for clients, servers and workstations, but also for network devices such as WLAN access points. Emergency plans were also reviewed and revised or prepared for the reaction to different shutdown scenarios. The responses show that a large part of these measures will remain in place for the time after the shutdown. As a result, IT operations will have to face energy efficiency requirements even more than before and enable more precise control of operating resources. For example, dynamic shutdowns and shutdowns of servers are mentioned, as well as constant energy monitoring and even greater consideration of the

energy efficiency of components in procurement. These changes require the development of new competencies, especially with regard to the dynamic and timely provision of operating resources depending on demand and resource utilisation.

The answers that were mentioned more than once are reproduced below.

1.1 What measures have you taken in the environment of the energy crisis?

What measures have you taken in the environment of the energy crisis?	Number
Reduce heating	18
Shutting down devices automatically	11
Manual shutdown of systems that are not needed	10
Workplaces are optimised	7
Shutting down PC pools	5
None	5
Emergency manuals reviewed and expanded	5
Preparation of shutdown scenarios	5
Switching off WLAN access points	4
More centralisation	4
Modernisation of systems	4
Increased home office	4
More virtualisation	3
Reduced load cut-off	3
Raising awareness among employees and students	3
Review energy consumption IT	3
Summary of systems	3
Replacing the illuminants with LED	2
Printer solutions adapted	2
Optimisation in the area of HPC	2
Testing UPS capacities	2

1.2 How does the energy crisis affect your operations?

How does the energy crisis affect your operations?	Number
Not at all	19
Low	6
It is harder to work in the cold	3
More home office	3

Budget situation becomes more difficult due to high energy costs	2
More power monitoring	2

1.3 Which of these measures will you retain in the foreseeable future?

Which of these measures will you retain in the foreseeable future?	Number
Consideration of energy efficiency in procurement	7
Automatic switch-off of devices	6
Shutting down PC pools	3
All	3
Workplaces are optimised	3
Total energy saving	3
Advancing crisis and emergency planning	3
Checking the power consumption	2
Centralisation is intensified	2

2 Changes in the top trends compared to the previous year

These questions are intended to shed light on how the top trends relevant to IT institutions at universities and research institutions change over the years.

Compared to the previous year, the top trends have changed as follows:
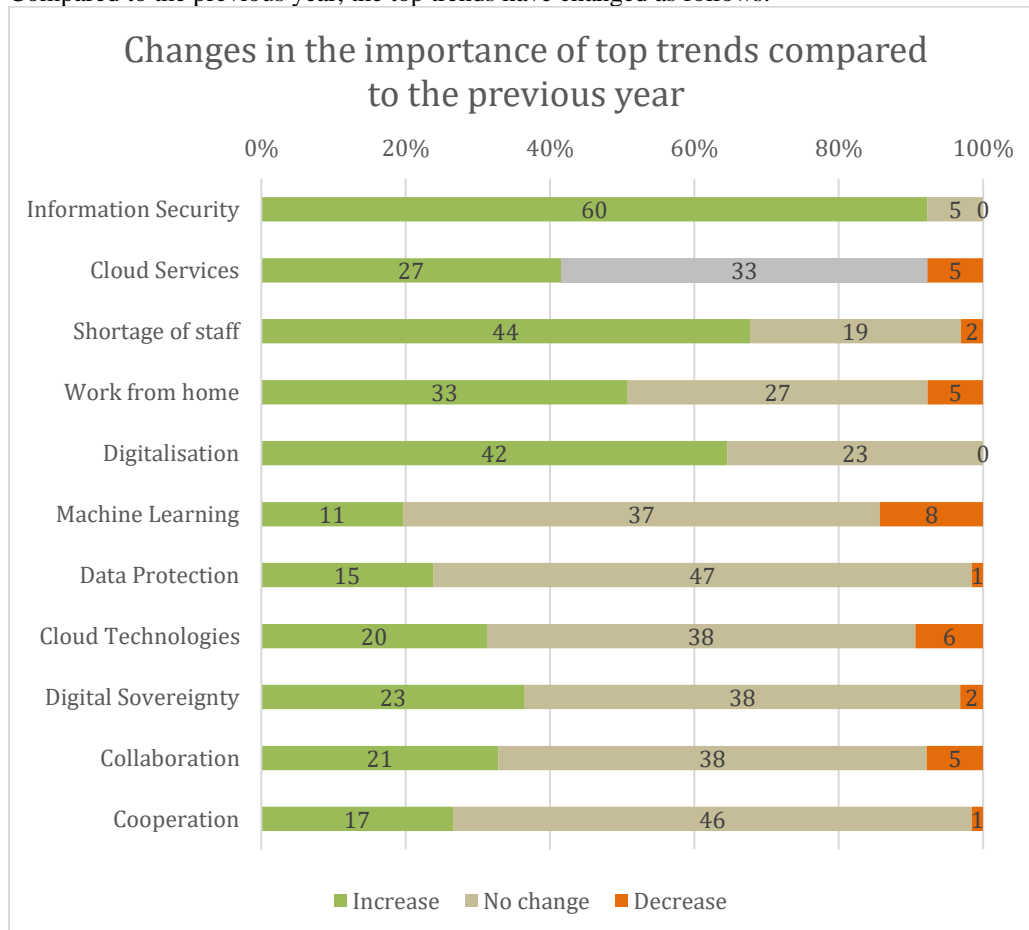

Figure 2: Changes in top trends compared to 2022 results sorted by top mentions in 2022 (n=66)

The following chart, based on the most frequent responses, shows how the topics have changed in their rankings within the top trends between 2018 and 2023.

Trend	Ranking in the relevant top trends					
	2023	2022	2021	2020	2019	2018
Information Security	1	1	2	1	1	5
Digitalisation	2	5	3	3	1	1
Cloud Services	3	2	1	2	6	4
Research Data Management	-	-	10	7	3	2
Machine Learning	-	6	11	4	4	-
Cooperation	8	11	8	5	4	7
Shortage of staff	4	3	9	6	10	-
Virtualisation	-	-	-	9	-	9
Data Protection	-	7	4	-	3	-
Work from home	-	4	6	-	-	-
Digital Sovereignty	5	9	5	-	-	-

It is obvious that there have been significant changes in priorities, especially in the last two years. For example, topics such as research data management, virtualisation, data protection and support for working from home are now integrated into the operational structures of the IT centres to such an extent that they are no longer cited as separate trends.

3 IT Governance

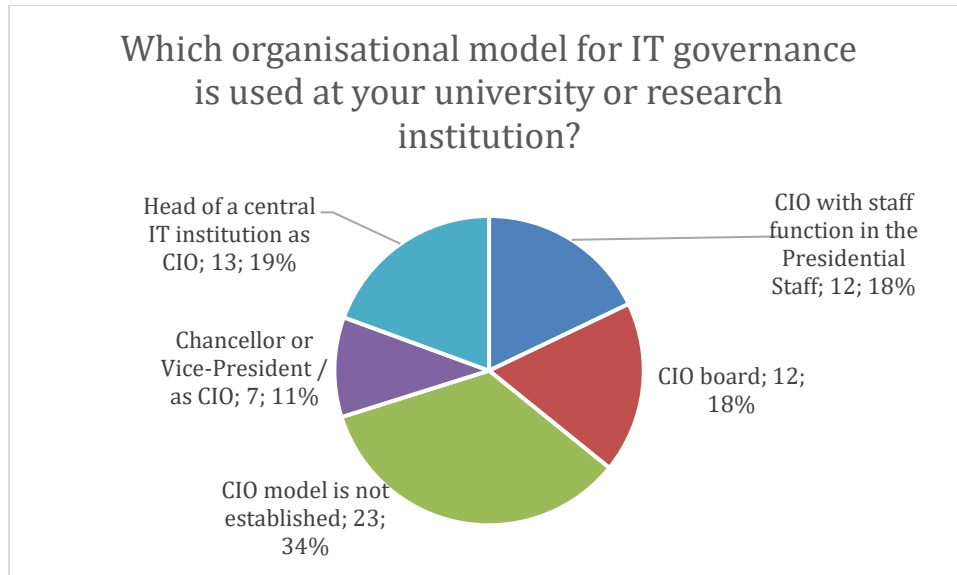Which organisational model for IT governance is used at your university or research institution?

Figure 3: IT governance model of own institution - distribution (n=68)

Still, as in previous years, the most frequent statement is "CIO model is not established". Around a quarter of the institutions surveyed gave this answer.

4 Author biographies

Malte Dreyer is the Director of the Computer and Media Service of Humboldt University Berlin, Germany. Within several major German, European and international projects he is active in the areas of digital research infrastructure, research information, service management, cloud services, virtual research environments and software architecture across many scientific disciplines.

Providing advise on software architecture, he is a member of several technical boards. Malte Dreyer's interests now are in the field of IT governance, information security management systems, scalable information management architectures and infrastructures in the intersection of organisational perspectives on ICT from data centres and information management organisations, both in the area of research infrastructure, as well as for digital learning architectures.