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CIOs at German Universities

A Survey by ZKI

*Hartmut Hotzel, Prof. Dr. Ulrich Lang,
Martin Wimmer, Dr. Markus von der Heyde*

CIOs at German Universities. A survey by ZKI

1. Introduction

1. *Universities in Germany*
2. *Motivation*
3. *What is a CIO?*
4. *The ZKI survey*

2. Results of the CIO survey

3. Effectiveness of CIO's work

4. Conclusion

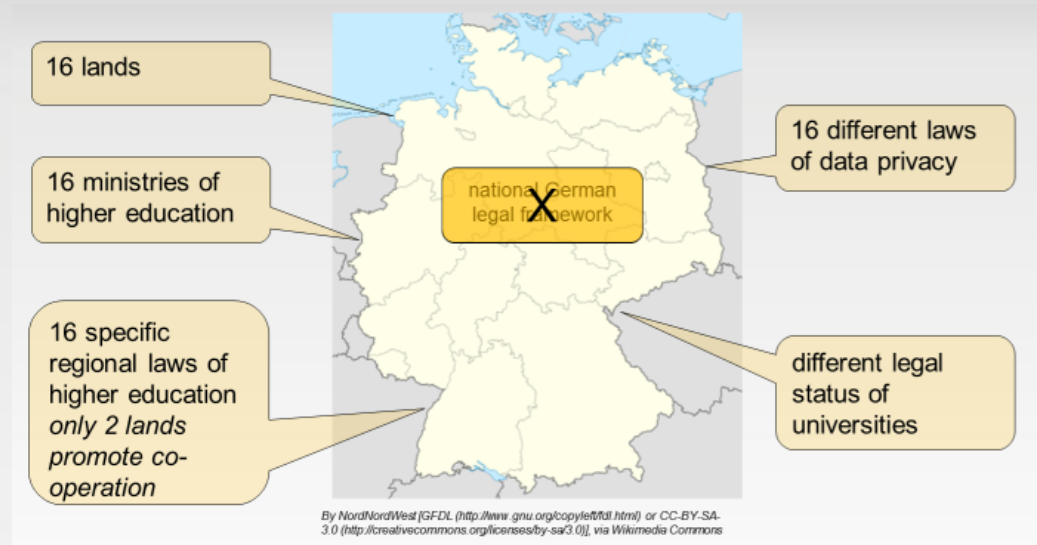
Universities in Germany

Germany

- Federal Republic → see graphics
- Some regional laws promote CIOs at universities

ZKI

- Zentren für Kommunikation und Informationsverarbeitung in Lehre und Forschung e.V. (centres for communication and information processing)
- Association of HE IT centres in Germany, i.e. universities, universities of applied sciences and large research facilities with public funding, plus supporting members



Motivation

Recommendations for a CIO

- 2001 by rectors' conference
- 2001 / 2006 / 2010 by Deutsche Forschungsgemeinschaft (German Research Foundation)
- 2003 / 2008 / 2012 by ZKI

Between 2005 and 2010 some of the German ministries of higher education requested the designation of a university CIO.

Review of these recommendations by ZKI 2014

- How was the CIO-concept transformed into practice?
- What is good practice?
- Is it possible to measure whether the CIO's work is successful or not?

What is a CIO?

„Types“ of CIOs

German DFG specifies four different „types“ of CIOs [DFG01]

- CIO as a member of the executive committee with strategic tasks
- CIO allocated to executive committee with strategic tasks
- CIO with operative tasks, such as a director of an IT-service center
- a CIO-panel

Within the survey we included all persons which are publicly documented as “CIO”.

What is a CIO? (cont'd)

IT-domains

A CIO should have the decision-making authority or be at least part of the decision making for most of the IT-domains even in non-profit organizations or government bodies [Wei04, Chapter 7]:

- IT principles
- infrastructure strategy
- IT architecture
- business applications
- IT priorities and investment

The ZKI survey

Looking for CIOs

- tracking official announcements of a university like websites
- ignoring unofficial or unpublished structures

Realisation

- asking the CIOs to participate in the ZKI survey by
- 60 to 120 minutes interview via phone

The ZKI survey – interview guidelines

- IT-Governance
 - CIO-model
 - self-concept
 - effectivity of CIO implementation
- inauguration of a CIO
 - reasons for implementing a CIO
 - changes and activities
 - operative criteria
 - challenges
 - recommendation
- strategy
 - institutional strategy
 - contents
 - CIO's input to strategy
 - cooperation between HE institutions
 - research and synergies
- IT costs
 - awareness
 - trend
- communication
 - standard communication channels
 - external networking
- concepts in decision making
 - transparency
 - handling of decisions / CIO's role
 - what would have failed without a CIO
 - awareness of IT-domains
- awareness of IT
- future development of CIO
(implementation)

CIOs at German Universities. A survey by ZKI

1. German Universities
- 2. Results of the CIO-survey**
 1. *Results*
 2. *Types of CIOs*
 3. *Relationship between CIO and Director IT*
 4. *Individual CIO vs. CIO-panel*
 5. *Statistics*
 6. *Reporting*
 7. *Universities vs. Universities of Applied Sciences*
 8. *Further results*
3. Effectiveness of CIO's work
4. Conclusion

Results

Universities in Germany

type of HE institution	owned by churches	private schools	government funded	total sum
universities of applied science	22	97 (0 of 1)	104 (6 of 14)	223 (6 of 15)
art and music colleges	8	3	46	57
universities	11	12	88 (22 of 41)	111 (22 of 41)
total sums	41	112 (0 of 1)	238 (28 of 55)	391 (28 of 56)

Table 1: Types of universities in Germany

1st number in brackets: participating CIOs

2nd number in brackets: total number of CIOs found

Overall results

- Different types of universities show a very distinct pattern
- Most German HE institutions did not yet implement the recommendations.
The ZKI-survey did not involve questions like „why not“

Types of CIO

Only 16 out of 28 CIOs correspond exactly to one of the four types of CIO described by [DFG01].

- CIOs as a **member of an executive committee** with strategic tasks:
 - Only three CIOs are responsible for decisions in IT-domains.
 - Four are vice presidents for administration (US: provost, Germany: Kanzler).
All these CIOs assigned the interviews to the directors of their IT-centers.
- CIOs **allocated to executive committees** with strategic tasks:
 - Four CIOs are allocated to executive committee.
 - There are also seven CIOs with a professorship and part-time CIO tasks.
 - Two CIOs are chairmen of a CIO-panel (see below).
- CIOs with **operative tasks**:
 - Nine CIOs are directors of an IT-unit (IT-center).
- **CIO-panel**:
 - Eight universities established a CIO-panel.
but all of these eight are missing the essential parts of the recommendations,
because they are not held responsible of any decisions.

Relationship between CIO and Director IT

Nomenclature

“Director IT” names the head of the IT service center within a university providing ICT services for the university

Hierarchical relationship

number of universities	hierarchical relationship between CIO and director IT			sum
	equals*	subordinate*	one person*	
type of CIO				
CIO panel	2		6	8
individual CIO	7	7	6	20
Sum	9	7	12	28

Table 2: Hierarchical relationship between CIO and director IT

- equals: CIO and director IT are on the same level
- subordinate: the director IT is subordinate to the CIO
- one person: CIO and director IT are one person

Individual CIO vs. CIO panel

Time spent for CIO's tasks as full time equivalent (FTE)

	number of universities	average time (FTE) for CIO tasks	average time (FTE) for CIO tasks of the participants
CIO panel	8	0.26	0.13
individual CIO	20	1.03	0.53
statistical test*		25.5	16.5
sum / average	28	0.81	0.41

Table 3: Time spent for CIO's tasks

- The interviewed CIOs who are members of a CIO panel only spend 13% of a FTE for CIO tasks.
- The sum of FTE for all members of a CIO panel also is about 25% FTE.
- Individual CIOs spend more the 50% of a FTE for CIO tasks.
- The value of 1.03 FTE means that on average more than one person is working on CIO tasks.

**next slide*

Statistics

There were 28 participants in this survey.

- We applied the Wilcoxon-Mann-Whitney rank-sum test (U-test), which
 - does not require a minimum number of participants
 - does not require a Gaussian distribution of the entity.
- Previous slide: There is a significant difference between the percentages of FTE for an individual CIO compared to a CIO panel.

We applied this test successfully to all reported differences in this paper (with an error rate below 5%) but prefer for simplicity to present the absolute values. More statistical results are provided in the study itself [ZKI14].

Reporting

Alternative classification of CIOs: CIO's role within the University

research CIO is a part of the research staff of the University
 director IT CIO is the director of the central IT service unit
 staff position CIO is attached to the executive committee
 (German: Stabsstelle).

To whom does the CIO report?

	report addressed to				
CIO's organizational role	no report	vice president	president / rector	executive committee	sum
research	2	1	3	5	11
director IT			1	12	13
staff position		1	2	1	4
sum	2	2	6	18	28

Table 4: Reporting

Universities vs. Universities of Applied Sciences

- There are only few differences between CIOs at research oriented Universities and CIOs at Universities of applied sciences.
- The Universities had established a CIO on an average 6.86 years ago, Universities of applied sciences only 3.67 years ago.
- Research oriented Universities more often (82%) defined CIOs tasks in written form, but only 17% of the Universities of applied sciences did so.

Further results

- University size: dividing the participating universities in two halves (14 with more and 14 with less students) did show only few differences. “Big” universities bear larger costs and on the other hand have more absolute third party funds.
- Whether a CIO is a full time CIO or a part time CIO does not correlate with the size of the university.
- There is no evidence that only a “big” university can afford a CIO.
- There is no evidence that the gender of a CIO is of any effect.
- There is even no evidence that a professorship or a PhD is useful for a CIO.
- There is no evidence that a CIO should be part of the executive committee or should even attend the meetings of the executive committee.

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2. Results of the CIO-survey
- 3. Effectiveness of CIO's work**
 1. *Criteria?*
 2. *Relationship Director IT vs. CIO and authority to decide*
 3. *Decision making authority*
4. Conclusion

Is there any measure for the effectiveness of a CIO's work?

Many of the participants in this survey were skeptical and did not suggest useful indicators.

Looking for possible indicators within the data of this survey we found that universities with a CIO structure in place that allowed for a better visibility of the IT personal across the institutions also had on average a 9% higher ratio of third party funds. There is an ongoing discussion among the authors whether this might be an indicator. An alternative explanation is that these institutions may have developed a high skill in focusing on the right decisions – and therefore have both: a different CIO structure and more research funds.

Relationship director IT vs. CIO and authority to decide

Is there any correlation between the authority to decide and a resulting effectiveness?

CIO and director IT	Number of universities	FTE of CIO for CIO's tasks	Sum of all FTE for CIO's tasks	CIO's authority to decide about IT domains
one person	12	0.27	0.46	0.00
hierarchical equal or subordinate	16	0.53	1.08	2.50
Sum	28			

Table 5: CIO's authority to decide

- Wherever the director IT holds the role of the CIO, the university never granted the CIO the authority to decide about IT domains.
- The other CIOs have the authority to decide on average for half of the IT domains defined by Weill and Ross [Wei04].

Decision making authority and hierarchy

The next table compares universities that gave decision making authority to the CIO at different levels.

“None” means that the CIO is not part of the decisions for the IT-Domains and therefore is primarily a consultant for the executive committee.

Responsibility for IT-domains	Number of universities	Hierarchy: director IT is subordinate to CIO	CIO with operational tasks
None	18	6%	67%
1-5	10	60%	10%
Sum	28		

Table 6: Number of it domains a CIO is responsible for, correlated to institutional hierarchy

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Conclusion

The most striking result of the present survey is

- that nearly half of all German research oriented universities implemented an official CIO structure,
- but they rarely implemented the recommendations of DFG, ZKI and others.
- The percentage of CIO structures within the universities of applied science is much lower.

There is a growing discussion within ZKI whether we shall include CIOs or other CxOs with IT strategic interest into ZKI's work.

One of us (Markus von der Heyde) is now working on a continuative study on CIOs at German universities. ZKI will continue discussing the “CIO topic” in summer 2015.

Thank you for your attention



ZKI-Geschäftsstelle
c/o Hochschule Heilbronn
Max-Planck-Str. 39
D-74081 Heilbronn
Fon +49 (0) 7131 504 555
Fax +49 (0) 7131 504 145551
Mail geschaeftsstelle@zki.de
www.zki.de

Prof. Dr. Ulrich Lang
Universität zu Köln
lang@uni-koeln.de

Dr. Markus von der Heyde
Informations-Technologie
zki@vdh-it.de



Hartmut Hotzel
Bauhaus-Universität Weimar
Fon +49 (0) 3643 58 2400
Fax + 49 (0) 3643 58 2402
hartmut.hotzel@zki.de

Martin Wimmer
Universität Regensburg
martin.wimmer@zki.de

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