



Niedersächsisches Ministerium  
für Wissenschaft und Kultur

HIS

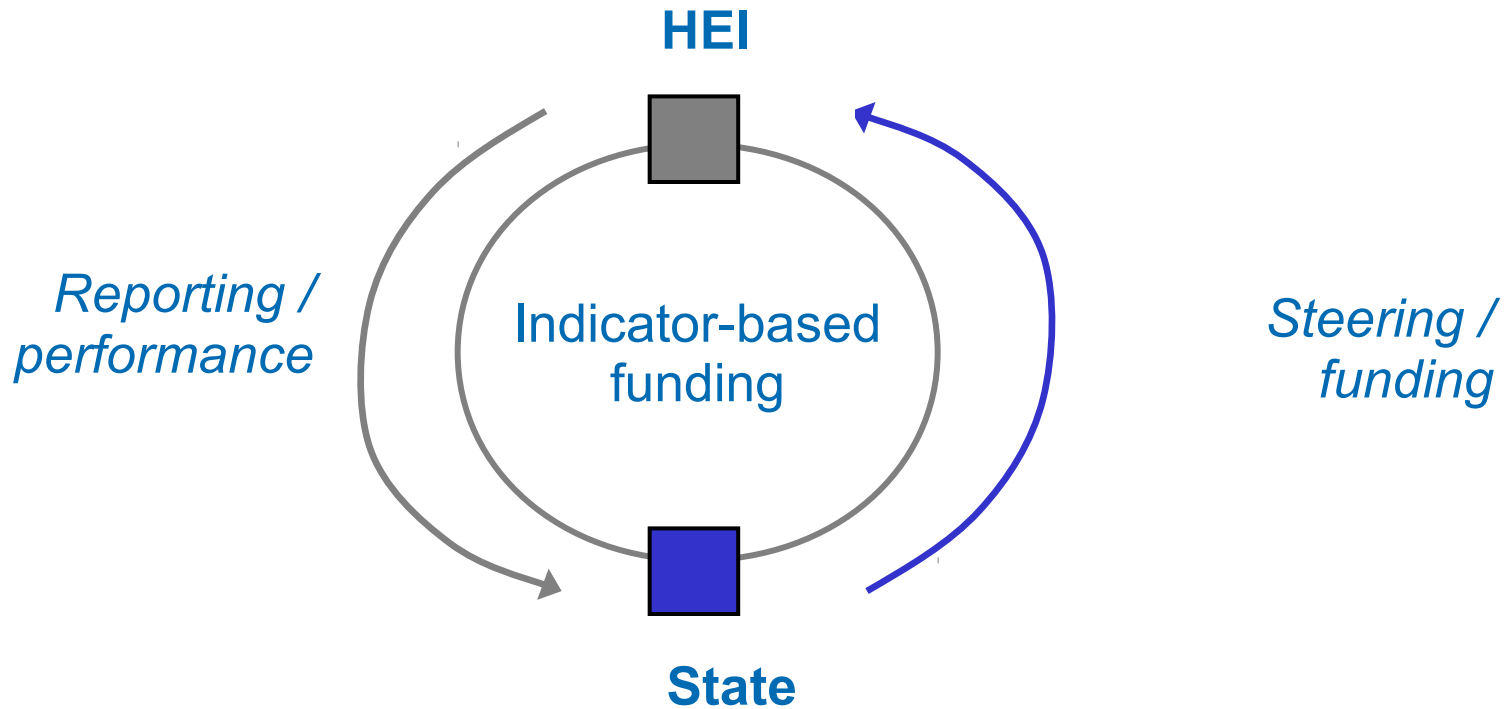
Hochschul  
Informations  
System GmbH



# Lower Saxony's Higher Education Indicator System: An Information System for Performance Based Funding



Peter Muessig-Trapp, 15 June 2010



Guiding question	Basis of decision	Goal(s) of funding	Possible instruments
What has the university achieved? (target agreements)	Past performance	to reward a good performance; competition market	Formula-funding according to performance-based indicators

Mail goal of the (not anymore really) new steering models:

## Self Direction of HEI

- Transparency and Competition inbetween the institutions
- Respect Hierarchies of Responsibilities (go down to the faculties and departments)
- Quality of the reporting system – oriented on the needs of the local users (not only on the needs of the politicians)
- Quality of data – make the data comparable and valid (building a task force for quality of official data)

## Common problems for indicator models

- Conflict of stability and reactivity
- Time lag: reference to values from long time ago
- Respect the differences between subject groups
- The more indicators used the better the system?
- Don't be too sophisticated!



**KISS: keep it simple and stupid!**

## Some considerations for HE funding

- Components: past cost, (past) performance, strategic development
- Transparency of procedures and results
- Fairness of competition (“level playing field”)
- Indicators should be clearly understood
- Regular review of operation and effects
- Information cycle should complement funding system

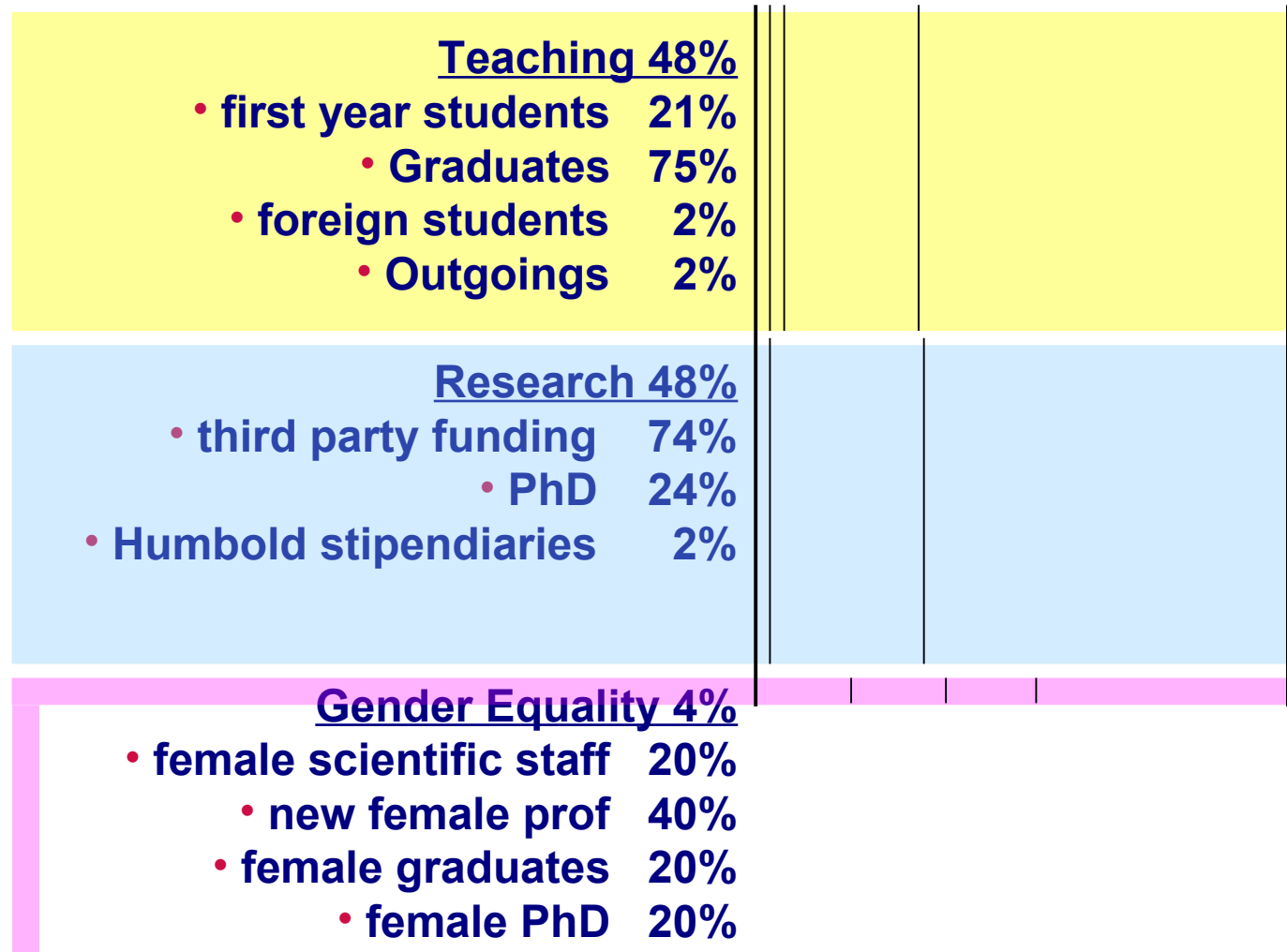
## Problems with the lower saxony formula in the beginning

- **Questions asked by HEI's – but not answered:**
  - Which compartements lose, which gain?
  - How's the formula calculated? What where the inputs?
  - What is our net gain / loss in the different areas?
  - How do we fare in comparison to other HEI's? Where do we stand?
- **Data quality**
  - Many different sources have to be coordinated
  - Validity is difficult to test

- Get data from official statistical office sources where possible
  - homogeneity, validity
- Distribute teaching data (students, graduates) to allow real partaking of university departments (data validation, observing competitors)
  - fairness
- Finer grained distribution of indicators on department level
  - transparency

- **Teaching**
  - Beginning students
  - Graduates weighted by semesters
  - Foreign students
  - Outgoings
- **Research**
  - Third party funding
  - Doctorates
  - Stipendiates
- **Gender Equality**
  - Female scientific staff
  - Newly appointed female professors
  - Female doctorates
  - Female graduates

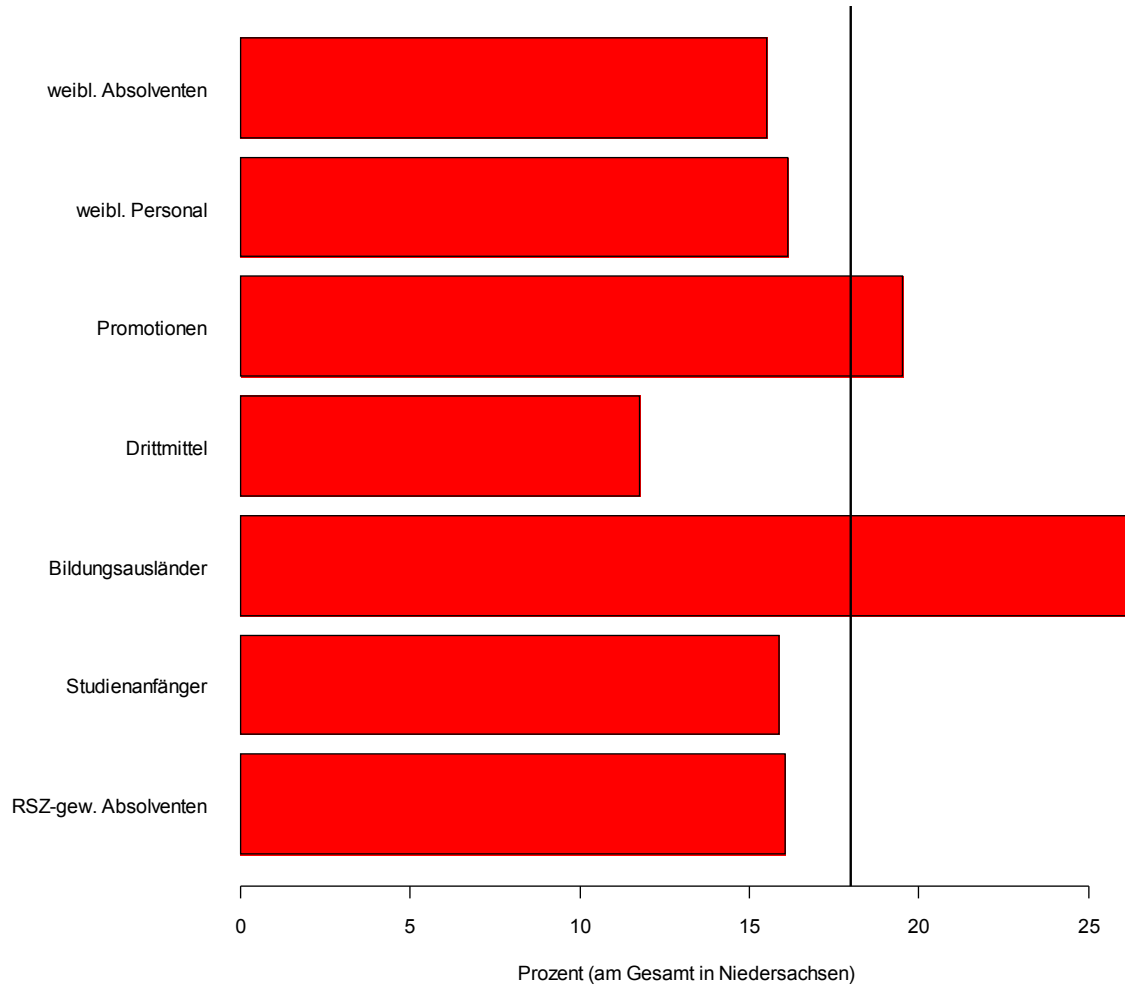
- subjects
  - lowest level of data aggregation, a subject can use services of different departments and even other units
- university departments
  - individual organisational units of universities – difficult to compare across universities
- teaching & research units (TRU)
  - defined for comparing universities on departmental level (although a comparison is not 100% possible as of yet...)
- formula subject groups (FSG)



**Example: A university gets 18 % of the budget, but achieves only 16,06 % alumnis in a subject group**  
**=> the university loses with respect to this parameter**  
**=> the budget percentage is the benchmark for the performance**

	budget		alumnis	
subject group 1 (Social Sciences)	sum	percent	sum	percent
Lower Saxony	262,5 Mio €	100	5546,3	100
University	47,2 Mio €	18	891	16,06

Profil of strengths and weaknesses  
of a university in one subject group



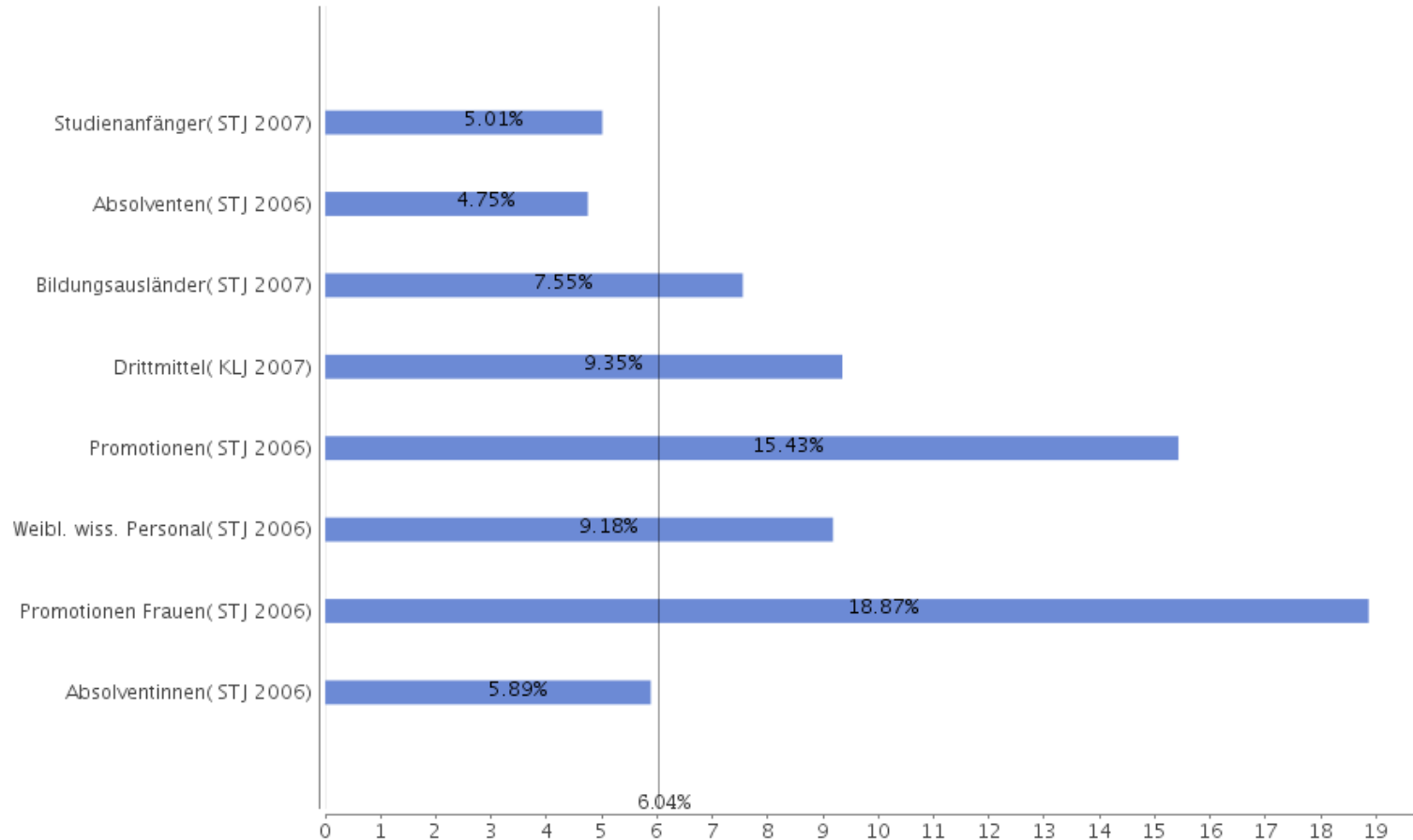
- Formula output
  - per FSG with weighting of the formula areas (i. e. output = 48% teaching + 48% research + 4 % gender equality = 100%)
- Simple Performance measurement:
  - output > input within a FSG: good performance
  - output < input within a FSG: bad performance
- **BUT:** We want to compare inbetween Universities, which can't be done on basis of FSG!
- For that purpose we have to measure performance of smaller units!

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### U Göttingen | Biologie

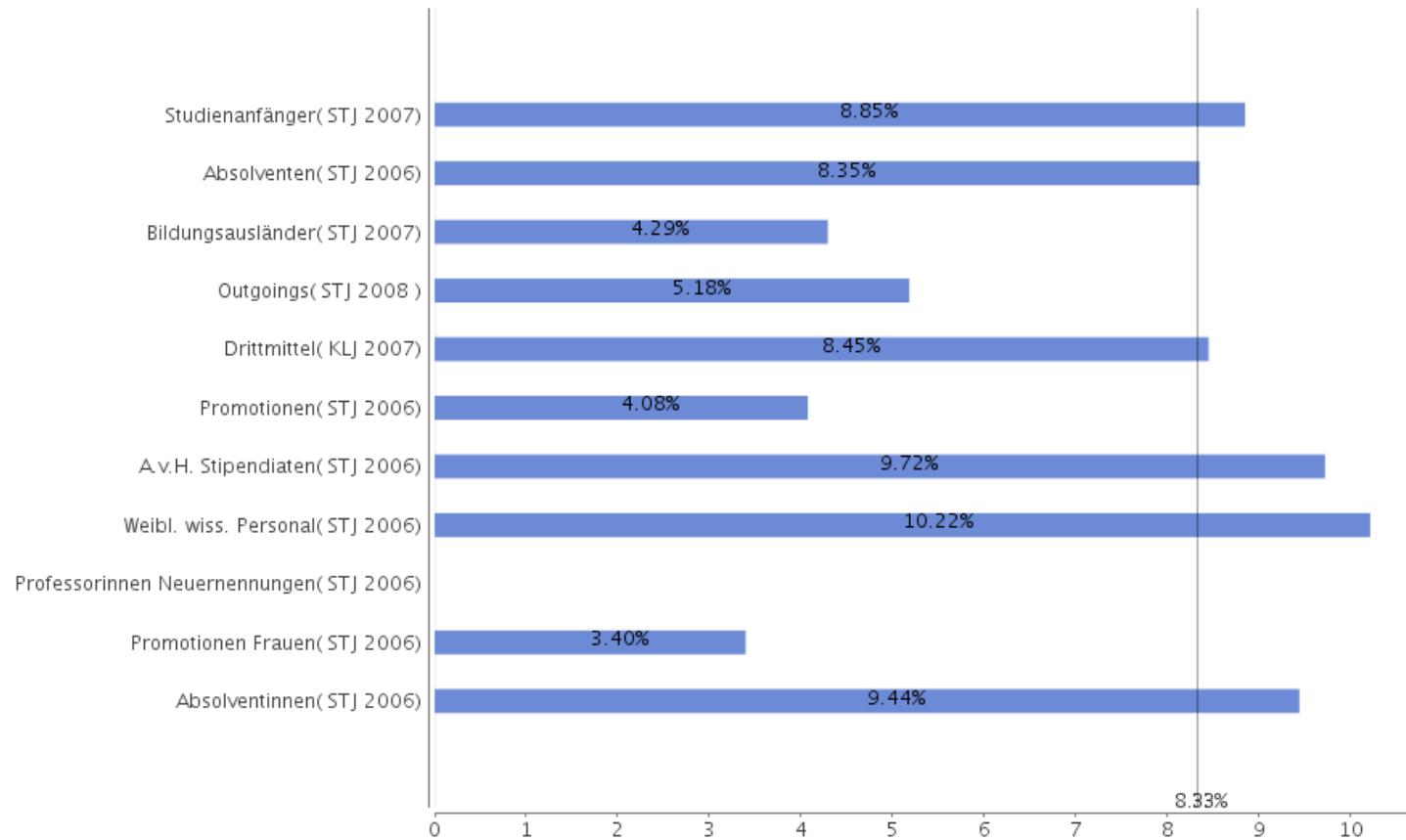
Anteil der Leistungsparameter an der Summe des jew. Parameters  
in der Formelfächergruppe Naturwissenschaften (U)  
Senkrecht: Anteil an den Haushaltsmitteln



### U Osnabrück | Insgesamt

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## web portal

- Main goal:  
transparency for all involved HEIs, basis for decision making
- Users:
  - HEI management staff
  - ministry for HE
  - (maybe later: broader public, press)
- Possibility to view and download data in all aggregation levels
- Data protection: restriction of access based on user roles possible
- diagrams to visualize results

# Live in action ...

## The Lower Saxony Indicator System for Higher Education Funding (HKS - Hochschulkennzahlensystem)

Hochschulkennzahlensystem Niedersachsen

Logout

Start

2009

### Fachhochschulen

Hochschule Braunschweig /  
Wolfenbüttel

Hochschule Hannover

Hochschule Hildesheim /  
Holzminden / Göttingen

Hochschule Oldenburg /  
Ostfriesland /  
Wilhelmshaven

Hochschule Osnabrück

### Universitäten

Hochschule für Bildende  
Künste Braunschweig

Technische Universität  
Braunschweig

Guten Tag, Herr Muessig!

Sie sind als HKS-Administrator eingeloggt.  
Wählen Sie eine Hochschule aus dem Menü links.

<http://icehks.his.de/>

# eduSTORE – Main System Features

- **Web application:** Access via Java capable web browser
- **Open architecture** - platform independence
- **Operation system:**
  - Server-side: Linux, Sun OS, MS Windows
  - Client-side: all commonly-used platforms
- **Database:**
  - Commercial databases:  
Oracle, Informix
  - Open source databases:  
MySQL, PostgreSQL



# Flexibility



## **1. Flexible data import**

- aggregated data
- individual data / pseudo individual data
- of any kind of structure and depth of structure

## **2. Flexible data export**

by using the Flexible Data Analyzer (FleDA)

## **3. Flexible data illustration**

by using the integrated HIS Reporting Framework (HRF)

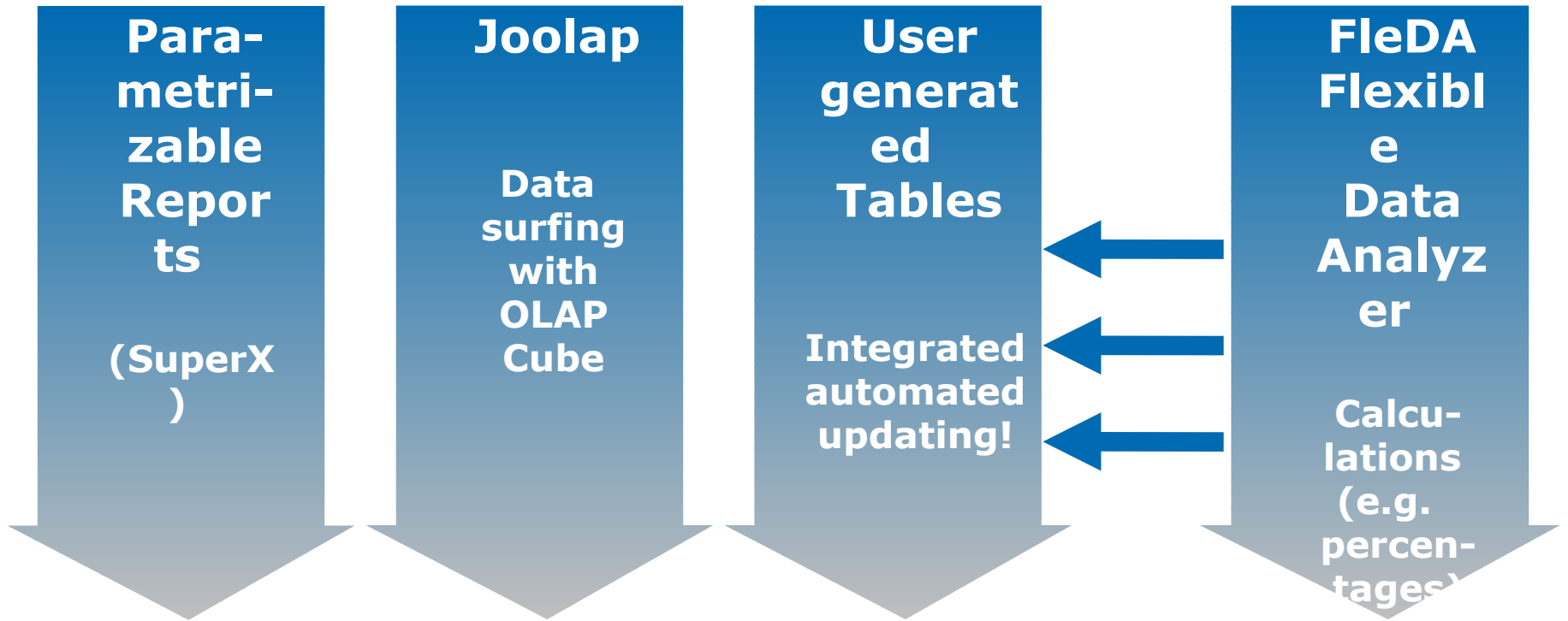
- XML → HTML, MS Excel, Gnumeric, PDF, LaTeX u. a.

# Data integration

- **Data harmonization** with an integrated key system
- **Centrally maintained** uniform eduSTORE key system
  - **Equivalence rules**
    - System knows **internal key hierarchies**



# Access Paths to eduSTORE



***eduSTORE***

# Free Software

Offering the  
freedom of  
free software

ICE is free software!

- Open Source: **Source code is available free of charge**
- Everybody is allowed to use the software
- Everybody is allowed to **change the source**
- Everybody could **adapt the software** to one's specific needs
- Open Source software provides you with the **freedom of independency**
- **No new dependencies** on foreign countries or on any company



N-HE

Using a  
in Higher Edu

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Colombo, 16 July 2008

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