Deceiving Simplicity

Balancing the need for ready-to-use research information with the semantic and technical complexity of research data

Hannelore Vanhaverbeke, Sabina Beullens, Lieve Timmermans, Tom Broos, Klara Gijsbers & Christelle Maeyaerts
Research Coordination Office & ICTS, KU Leuven
• KU Leuven
• A short history of data management at KU Leuven – with a special role for research data
• The rise of KU Loket
• The need for a CRIS
• The building of a CRIS
• The birth of a CRIS – Research Stats@KU Leuven
• Its subsequent adventures
• KU Leuven
  – Flanders, Belgium
  – founded 1425
  – research intensive university & LERU member
  – > 40.000 students; > 4.500 PhD students; > 1.000 postdocs; > 1,000 professors
  – > 365 billion € research expenditure
  – 625 PhDs
  – 98 spin-offs

Data for 2012-2013
• KU Leuven

a myriad of data generated in many places
in many formats
from micro-scale (individual researcher)
to macro-level (the university)
• KU Leuven
• A short history of data management at KU Leuven
  – with a special role for research data
Originally several mainframes

One integrated structure – SAP
1999-2003

CERIF structure
- projects
- persons
- org unit

research

education

finance

student admin

logistics

HR
SAP

SAP-experts

BW – ‘cubes’
domain-experts

relevant queries for analysis & reporting using SAP-data
BexAnalyzer

Average user has no access to data
• KU Leuven
• A short history of data management at KU Leuven — with a special role for research data
• The rise of KU Loket
KU Leuven individual data portal: KU Loket

SAP

BW
personalized access for KU Leuven staff

depending on authorization rights, different applications within each domain are accessible

limited ‘self-service’ facilities

all information linked to researcher on basis of unique & persistent staff ID
# KU Loket - Research related information

<table>
<thead>
<tr>
<th>Info type</th>
<th>Staff</th>
<th>PhD Projects</th>
<th>Research Projects</th>
<th>Funding</th>
<th>Publications &amp; Citations</th>
<th>Patents</th>
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<tbody>
<tr>
<td>Domain</td>
<td>HR</td>
<td>Student Administration &amp; Research</td>
<td>Research</td>
<td>Research (internal funds) or Financial (external funds)</td>
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<td>Centrally by Research Coordination Office</td>
<td>Centrally by Financial Services</td>
<td>Individual Researchers</td>
<td>Centrally by Technology Transfer Office</td>
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<td>Visible to</td>
<td>Heads of all units</td>
<td>Supervisors PhD students</td>
<td>Supervisors</td>
<td>Supervisors</td>
<td>All staff with publications</td>
<td>Inventor</td>
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IR since 2006 DSpace

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Who’s who at KU Leuven

Unit
- Animal Physiology and Neurobiology Section

Belongs to (according to the corporate view):
- Department of Biology

Functions
- full professor Faculty of Science
- head of the Animal Physiology and Neurobiology Section
- vice rector of Research Policy

Curriculum Vitae
- Research topics
- Research projects
- Research expertise
- Teaching
- Publications

SAP
IR
• KU Leuven
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• The rise of KU Loket
• The need for a CRIS
The need for a CRIS

• End of support for BExAnalyzer
  – building queries in BW on SAP data
  – pilot project in BO

• Research assessment by external peers
  – per department
  – = need for aggregated data
A CRIS as policy tool

- support for development of bottom-up research policy of departments

- monitoring research trends

- by way of relevant quantitivate indicators
• KU Leuven
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Quick consensus on starter pack, data for the last 5 years, for all organisational units
- staff
- PhDs
- research projects
- funding
- publications & citations
• staff
  – FTE
  – categorisation
    • professors (Assistant, Associated, Professors, Full Professors)
    • research managers and experts
    • postdoctoral researchers
    • PhD students
    • other scientific collaborators
    • administrative and technical staff

• PhDs
  – finished
  – in progress

• research projects
  – internally financed
  – externally financed (regional, federal, international)

• funding
  – as expenditure, per funding source

• publications & citations
  – Web of Science & JCR
  – Flemish Academic Bibliographic Database
  – KU Leuven own categorisation
Key issues

• Key Performance Indicators (KPIs) considered relevant by stakeholders
• validated by the office generating the data
• uniformly calculated for all research units
• uniformly presented for all research units
• updated regularly
• accessible by authorization only
• presented in one platform
• ready to use: clear presentation, intuitive interface, exportable reports
Validation

- staff \[\rightarrow\] HR department
- PhDs \[\rightarrow\] doctoral schools
- research projects \[\rightarrow\] Research Coordination Office
- funding \[\rightarrow\] finance department
- publications & citations \[\rightarrow\] submitters to the repository
Key Performance Indicators (KPIs) considered relevant by stakeholders

validated by the office generating the data

uniformly calculated for all research units

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ICT-tasks
• That was the relatively easy part...
  – stakeholders knew what they wanted
  – RCO knew what it needed
  – and now for the data in SAP & the repository
the need for ready-to-use research information

the semantic & technical complexity of research data
“Quick consensus on starter pack, data for the last 5 years, for all organisational units”

define “organisational units”

how far down in the organisational chart?

research assessment per department

but more granularity was expected
Quick consensus on starter pack, data for the last 5 years, for all organisational units

Wish meets semantics

“Quick consensus on starter pack, data for the last 5 years, for all organisational units”

define data per organisational unit
The problem of data allocation to an organisational unit

That’s easy: each staff ID is linked to a unit!

Well... it isn’t always

Wish meets semantics
Wish meets *semantics*

The problem of data allocation to an organisational unit

The ideal situation

- KPIs
- staff ID
- active
- current research unit
The problem of data allocation to an organisational unit

The first trouble
Wish meets *semantics*

The problem of data allocation to an organisational unit

The second trouble
Wish meets semantics

The problem of data allocation to an organisational unit

The solution

- KPIs
- staff ID
- active
- current research unit
- no longer in existence
- most recent research unit in existence
- most recent active research unit
- inactive research unit of higher order
BW InfoProviders

- Personnel Administration
- Research Projects
- Doctoral Projects
- Publications & Citations
- Research Funding

BEX Queries

- BEX-queries
- 1 query for several reports
<table>
<thead>
<tr>
<th>KPIs (reports)</th>
<th>Staff</th>
<th>PhD Projects</th>
<th>Research Projects</th>
<th>Funding</th>
<th>Publications &amp; Citations</th>
</tr>
</thead>
<tbody>
<tr>
<td>professors, postdocs, PhD students &amp; research collaborators, admin. &amp; techn. staff</td>
<td>nr. of finished PhDs &amp; nr. of current PhD projects</td>
<td>* nr. of intern. &amp; extern. financed projects</td>
<td>intern. &amp; extern. acquired funding</td>
<td>* papers in journals &amp; proceedings</td>
<td>* papers in journals &amp; proceedings</td>
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<tr>
<td></td>
<td></td>
<td>* nr. of extern. financed bursaries</td>
<td></td>
<td>* books &amp; book chapters</td>
<td>* books &amp; book chapters</td>
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<tr>
<td></td>
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<td></td>
<td>* citations</td>
<td>* citations</td>
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<td>* Impact factors (IF)</td>
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<td></td>
<td></td>
<td>* top journal publications</td>
<td>* top journal publications</td>
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<td>Calculation</td>
<td>FTE</td>
<td>nr of projects</td>
<td>nr of projects or bursaries</td>
<td>expenses on research grants</td>
<td>*nr. of publications</td>
</tr>
<tr>
<td></td>
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<td></td>
<td></td>
<td>*nr. of citations</td>
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<td></td>
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<td>* IF: sum, max. &amp; avg. IF in publication year &amp; recent IF</td>
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<td>*nr. of papers in top journal (as defined by the Flemish Centre for Research &amp; Development Monitoring)</td>
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<td>* January</td>
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<td>* May</td>
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<td>* annually</td>
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<td>* weekly</td>
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Authorised access only

- authorised users only
  - heads of department
  - rector
  - ...

- for authorised levels only
  - the own department only
  - the whole university
  - ...

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CRIS for KU Leuven researchers
Research Stats @KU Leuven
From data to CRIS

- BW InfoProviders
  - Personnel Administration
  - Research Projects
  - Doctoral Projects
  - Publications & Citations
  - Research Funding

- BEX Queries
  - BEX-queries
  - 1 query for several reports
  - With variables processed by authorizations

- BO reports
  - WebI-documents
  - One HTML-overview page
Research Statistics @ KU Leuven

- Web-based tool (WebI)
- integrated in existing portal KU Loket
  - visible only to authorised users
Staff

Projects & Scholarships

PhDs

Publications & Citations

Expenditures
<table>
<thead>
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<th>Research Unit</th>
<th>Total</th>
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<tr>
<td>organisatiesstruct. Associatie KU Leuven</td>
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<tr>
<td>Rechtspersoon KU Leuven</td>
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<td>KU Leuven Research &amp; Development</td>
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<tr>
<td>Interne Audit</td>
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Staff as Full Time Equivalent (end of May 2014)
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<table>
<thead>
<tr>
<th>Research Unit</th>
<th>Total</th>
<th>prof</th>
<th>prof</th>
<th>Research experts</th>
<th>post doc</th>
<th>PhD &amp; scient. collab</th>
<th>ATP</th>
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<tbody>
<tr>
<td>Organisatiesstructuur</td>
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### Contractuele VTE

- **ZAP**: 34.28%
- **Onderzoekskader**: 11.24%
- **Postdoc**: 11.42%
- **Wet.medew. & Doct. burs.**: 3.16%
- **ATP**: 1.09%
- **OP3**: 38.77%
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<th>Orde nummer</th>
<th>Naam</th>
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The story continues

- extension time window to 10 year for citation data – April 2013

- integration of academic university colleges in KU Leuven – Oct-Dec 2013

- analogous tool for Technology Transfer Office, to manage licenses & patents and spin-offs – 2015
  - future integration with current CRIS

- internal monitoring & policy support tool
  - no integration with external CRIS planned
  - but participation in regional Flemish initiative