Towards a Core Model for Higher Education IT Management Benchmarking
Contents

1. Research background
   – Why Research this?
   – Four Projects, same goals

2. Data Comparison
   – Potentially Comparable
   – Unlikely Comparable

3. Process Comparison
   – Similarities in Processes

4. European-Wide Benchmarking
   – Cooperating Organisation
1. Why Research This?

• Higher Education is international
  – Universities want the best students regardless of nationality
  – IT managers need tools to assess their organisations’ performance
  – Traditional metrics not necessarily IT-related
  – Number of publications, endowment, alumni salaries…

• IT benchmarking is national
  – Direct comparison between HEIs in other countries is not possible
  – Comparison of IT benchmarking projects not previously done

• Joint European project planning requires background information
1. Research Questions

• Q1: What similarities, common factors, and notable differences are there among four established higher education IT benchmarking projects in various European countries, regarding data and its manipulation processes?

• Q2: Based on main similarities and major differences of these four projects, what kind of European-wide higher education IT benchmarking project is feasible?
1. Participating Projects

- Finland University Polytech.
- UK University College
- Spain University
- USA University College

Bencheit
UCISA
UNIVERSITIC
EDUCAUSE

Common European Benchmarking Project
1. Basic Background Information

<table>
<thead>
<tr>
<th>Project</th>
<th>Bencheit</th>
<th>UCISA</th>
<th>UNIVERSITIC</th>
<th>EDUCAUSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Country</td>
<td>Finland</td>
<td>United Kingdom</td>
<td>Spain</td>
<td>United States</td>
</tr>
<tr>
<td>Frequency</td>
<td>Yearly</td>
<td>Yearly</td>
<td>Yearly</td>
<td>Yearly</td>
</tr>
<tr>
<td>Scope</td>
<td>Finland and some partners abroad</td>
<td>UK HEIs</td>
<td>Spanish universities</td>
<td>American HEIs, open for internationals</td>
</tr>
<tr>
<td>Coverage*</td>
<td>88% (36/41)</td>
<td>50% (70/140)</td>
<td>89% (65/73)</td>
<td>Nearly 1000 participants</td>
</tr>
<tr>
<td>Funding</td>
<td>Founding HEIs</td>
<td>Self-funded</td>
<td>Partnerships</td>
<td>Self-funded</td>
</tr>
<tr>
<td>Cost</td>
<td>Free of charge</td>
<td>Free of charge</td>
<td>Free of charge</td>
<td>Free of charge</td>
</tr>
<tr>
<td>Modularity</td>
<td>None, some in testing</td>
<td>Two tiers</td>
<td>Three parts</td>
<td>12 separate modules</td>
</tr>
</tbody>
</table>

* The coverage is the number of participating HEIs per the maximum possible participants in their area of operation. Not available for EDUCAUSE.
2. Data Comparison Framework

• Comparison of indicators in six different areas

1. Indicator Categorisation
2. Personnel Composition and Costs
3. Hardware Composition and Costs
4. Software Composition and Costs
5. Distributed IT
6. Best Practices
2. Potentially Comparable Themes (1/2)

- Amount of students and staff
  - FTE and absolute used - convertible?
  - Often available from official sources for verification
- Total costs
  - Staff
  - “Other”
- Volumes
  - Absolute numbers of workstations, servers, data networks
  - Open source usage
- Budgets
  - Totals
  - Breakdown by function common, depth and style varies
2. Potentially Comparable Themes (2/2)

- Some indicators can be compared by streamlining the categorisation
  - Depth and categorisation of indicators vary
  - IT units (network team, helpdesk, etc.)
  - Staff costs
- Outsourced services
  - Portion of outsourcing in entire budget
  - Classification by resource common
- Distributed services
  - Are we content with simply centralised/distributed classification?
2. Unlikely Comparable Themes

• Best practices
  – Not universally benchmarked
  – Designed to be specific to an environment
  – Usually indicators that do not yield direct numeric data

• Organisational learning

• Specific non-streamlined cost categories
  – Electricity consumption, cloud services
2. General Notes on Data Comparability

• After careful selection many indicators can be deemed “similar enough” to compare
  – Error tolerance?

• Leads to a patchy coverage of indicators
  – Not necessarily in the best interest of information users

• Full coverage impossible
  – Requires new forms of cooperation
3. Process Comparison Framework

- Comparison of four different benchmarking process areas
- Synthesis from theory

1. Purpose and Goals
2. Data Collection, Validation, and Analysis
3. Documentation, Communication, and Feedback
4. Reporting and Member Retention
3. Data Collection, Validation, and Analysis Methods

• Web interfaces common for collection
  – Bencheit: custom Excel sheet, collaboration web workspace
  – UNIVERSITIC: kti4u web interface
  – EDUCAUSE: proprietary web interface
  – UCISA: Vovici web based survey, collaboration web workspace

• Some automated validation implemented
  – Zero elimination
  – Year-to-year comparison
  – Manual checks by dedicated members

• Analysis done mostly by hand, especially in small projects
  – Web interfaces do preliminary summaries
  – Excel sheets contain analytical formulae
3. Documentation, Communication, and Feedback

- Basic instructions very good
  - Personal assistance available in smaller projects
- Some advanced documentation available
  - Manuals and extensive indicator catalogues in English

- Meetings seen as crucial in Europe
  - Additionally email lists, web collaboration platforms

- Every project collect appropriate feedback
  - Utility, ease, time, problems
  - Usually once a year
  - Web surveys
3. Reporting and Member Retention

• Published report depth varies greatly
  – No official reporting to full-depth yearly catalogues

• Member retention not seen as an issue
  – Specific steps to retain members rarely taken
  – “Business as usual” benchmarking
4. European-Wide Benchmarking

• Directly combining projects not feasible
  – Discontinuing existing projects
  – New organisation, indicator catalogues
  – Language issues

• Cooperation Organisation (CO)
  – Individual projects submit their data through a streamlined system to the CO
  – CO collects, verifies and analyses the data
  – CO prepares a common report based on agreed guidelines
  – Member projects review and accept the report for their own use
  – Aggregated data available for all members
4. Coordinating Organisation Illustrated

Individual European projects

Coordinating and collecting organisation (CO)

Common report
4. Issues Requiring Further Study

• Management
• Funding
  – Participation fees
  – Institutional funding (EU, national schemes)
  – Partner companies
  – Commercial activity
• Legal considerations
• Data openness
• Language
• Currency unit
4. Summary

• Data indicators have similarity in basic level, but advanced benchmarking features have differentiated the projects
• Data collection, verification and analysing processes are different in each project, but considerable similarities exist
• Comprehensive organisation model for the CO warrants further study
• Level of acceptance for a CO among existing benchmarking projects is unknown
Benchmarking university IT

CIO Ilkka Siissalo, University of Helsinki
ilkka.siissalo@helsinki.fi
What is benchmarking?

Identifying best practises

• Common practise in commercial companies
• Measuring volumes: no. of people, machines, volume indicators of storage, no. of servers etc.
• Costs: Total cost of IT, cost per workstation?

• Why??
  • top management likes you if you do it 😊
  • risk analysis
  • missing opportunities??
Old Swedish/Norwegian benchmarking

- High expectations – risk analysis – attempted comparison with commercial companies, state and communes
Old Swedish/Norwegian benchmarking

- Costs were shown without indication to which university was which

Be open – YOU benefit !!
There are commercial players who do this also... e.g. Gartner

Overall cost levels are 8% below the costs Gartner finds in the market;

- Unix and Wintel have higher cost levels
- Client & Peripherals, IT Helpdesk and Data networking have lower cost levels
Comparison with companies?

We tried in 2007 a commercial benchmarking

…and learned a lot

- comparison data from commercial companies was interesting in many cases – but we did not now which companies they were -> relevance??
- we found out many areas for improvements
- ...and were surprised to see that we were actually doing pretty well and that there were no major differences
Key learnings

• BM has to be repeated
  – preferably every year
• expensive investments cause fluctuation

• This CANNOT be done with questions made for companies
  • ...and it should not be done by sending out questionnaires to 100+ institutes / university

• The most useful data is often the simplest – like total costs, key differences in volumes
• focus on centralisation of IT and standardisation
  – Being small = being expensive
Bencheit - Benchmarking higher education IT

Yvonne Kivi
University of Helsinki
BM2012: Coverage

- Participants from Finland, Sweden, Estonia, Denmark, Norway, Germany
  - Universities: Finland 12, Sweden 2, Estonia 1, Denmark 1, Norway 2, Germany 1
  - Universities of applied science: Finland 20

- Institutes of very different sizes, from 1000 students to 24000, or 2 IT FTE:s to 340.

- Find a similar organisation to compare with
Principle of total openness

You join in and give your data =
You get everybody else’s data

Participants have the right to view data of any other participating HEI.

Data ownership is not given to a commercial company
Tools needed

- Excel 2010
  - Both the survey form and the report

![Table of IT costs](image)
Tools needed

- Google, Windows Live ID or Yahoo account
  - To sign in to…
- Eduuni, a collaboration platform based on SharePoint http://www.eduuni.fi/
  - Access rights can be applied to email addresses
  - Everyone can choose which credentials they want to use
Questions

• Background information about your HEI
• Costs and FTE per account group and organisational level, e.g.:
  – How much money does the IT-center spend on workstation hardware?
  – How much does the distributed IT spend on staff costs for audiovisual services?
• Volumes, e.g.:
  – Number of data centers
  – Number of IT classrooms
  – Number of network printers
Results: Average of all universities

- Total IT costs:
  - Centralized IT costs: 28%
  - IT costs in other central units: 18%
  - IT costs in academic units: 52%
  - Unspecified: 2%

- Total IT personnel:
  - Centralized IT personnel: 66%
  - IT personnel in other central units: 12%
  - IT personnel in academic units: 22%
  - Unspecified: 0%

- Costs by account:
  - Hardware: 42%
  - Software: 11%
  - Staff: 7%
  - Facilities: 4%
  - Outsourcing: 24%
  - Unspecified: 12%
Feedback and improvements

• 75% said they understood the terms easily and the survey form in Excel was flexible
• Over 50% feels that it is hard to find the data needed, but almost 90% are confident that the data is accurate
• An average of 10-11 working days was spent on filling in the survey
• Everyone agreed that the CIO summary is useful
IT share of budget and staff
Example: University of Helsinki

Centralisation:
Blue: centralised IT
Red: other centralised
Green: IT in faculties
Purple: unspecified

Blue: IT share of budget
Red: IT share of staff
Number of students and staff / IT FTE
Example: University of Helsinki

Blue: Staff / IT FTE
Red: Students / IT FTE
How to participate

- Email us at bencheit@bencheit.info
- Visit us on www.bencheit.info
“About indicators - What is the average number of fingers in a hand of your employee?”

Teemu Seesto
University of Turku, Finland

Eunis2013 conference, Riga, Latvia
BM2012: “Indicators?”

- 22 calculated indicators e.g.:
  - IT Costs / Student FTE
  - IT Costs / Staff FTE
  - IT Costs / User account
  - Costs per organisational level
  - Total staff / IT Staff
  - Students / IT Staff
  - Workstations / Staff FTE
BM2012: “Indicators”

• Continuous indicators*

<table>
<thead>
<tr>
<th></th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workstations in personal use / Staff FTE</td>
<td>1,77</td>
<td>1,85</td>
</tr>
<tr>
<td>Workstation costs / Workstation / Year</td>
<td>227€</td>
<td>233€</td>
</tr>
</tbody>
</table>

Min Avg Median Max

| IT costs/ Institution budget* | 4,1 % | 6,2 % | 6,4 % | 12,2 % |

• Indicators for ad-hoc purposes*
  – Cloud service maturity stage
  – Eduroam coverage
  – Usage of grid computing

What do you use/need?
Benchmark 2012

Thank you!

Teemu Seesto
IT manager
University of Turku
Finland
teemu.seesto@utu.fi

Bencheit: http://www.bencheit.info
Benefits of Benchmarking in University of Tartu

Marti Taremaa
The University of Southern Denmark
- a short introduction
SDU facts


5 faculties: Engineering, Science, Health Sciences, Humanities, Business and Social Sciences

6 campuses – Odense is the main campus

Income, 2012: 351 mill. EUR
Academic staff, FTE, 2012: 1,973
Technical and adm. staff, FTE, 2012: 1,445

Students, no (oct. 2012): 26,034
(of which from other countries: 4,104)

Programs, no (bachelor + master): 222
(of which in English: 81)
SDU facts

HOVEDTAL

<table>
<thead>
<tr>
<th>Indikator</th>
<th>I alt</th>
<th>% forskel itf. 12-06-2012 (Slut 2012 i parentes)</th>
<th>I går</th>
<th>7 dage</th>
<th>Mål</th>
</tr>
</thead>
<tbody>
<tr>
<td>oof.</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. prioritet</td>
<td>3.677</td>
<td>12% (-32%)</td>
<td>0</td>
<td>108</td>
<td>Nej</td>
</tr>
<tr>
<td>Alle ansøgninger</td>
<td>10.322</td>
<td>15% (-31%)</td>
<td>0</td>
<td>290</td>
<td></td>
</tr>
<tr>
<td>Antal personer</td>
<td>7.883</td>
<td>14% (-27%)</td>
<td>0</td>
<td>196</td>
<td></td>
</tr>
</tbody>
</table>

AKTUELLE SEKTORTAL

SDUs markedsandel pr. 15-03-2013 (kvote %)

<table>
<thead>
<tr>
<th>LVUs</th>
<th>KU</th>
<th>AU</th>
<th>CBS</th>
<th>SDU</th>
<th>AAU</th>
<th>RUC</th>
<th>DTU</th>
<th>ITU</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>30%</td>
<td></td>
<td>23%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>CBS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>AAU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RUC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DTU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ITU</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*Målt på antal 1. prioritetsansøgninger pr. 15. marts 2013.

FAKULTET

<table>
<thead>
<tr>
<th>1. prioriterer</th>
<th>I alt</th>
<th>% forskel itf. 12-06-2012 (Slut 2012 i parentes)</th>
<th>I går</th>
<th>7 dage</th>
<th>Mål</th>
</tr>
</thead>
<tbody>
<tr>
<td>Humaniora</td>
<td>979</td>
<td>17% (-36%)</td>
<td>0</td>
<td>45</td>
<td>Nej</td>
</tr>
<tr>
<td>Naturvidenskab</td>
<td>180</td>
<td>7% (-53%)</td>
<td>0</td>
<td>9</td>
<td>Nej</td>
</tr>
<tr>
<td>Samfundsvidenskab</td>
<td>943</td>
<td>7% (-39%)</td>
<td>0</td>
<td>23</td>
<td>Nej</td>
</tr>
<tr>
<td>Sundhedsvidenskab</td>
<td>1.195</td>
<td>11% (-6%)</td>
<td>0</td>
<td>10</td>
<td>Nej</td>
</tr>
<tr>
<td>Teknik</td>
<td>380</td>
<td>20% (-43%)</td>
<td>0</td>
<td>21</td>
<td>Nej</td>
</tr>
</tbody>
</table>

CAMPUS

<table>
<thead>
<tr>
<th>1. prioriterer</th>
<th>I alt</th>
<th>% forskel itf. 12-06-2012 (Slut 2012 i parentes)</th>
<th>I går</th>
<th>7 dage</th>
<th>Mål</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Esbjerg</td>
<td>72</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kolding</td>
<td>170</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Odense</td>
<td>3.019</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Slagelse</td>
<td>159</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sønderborg</td>
<td>257</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Construction plans
Campus Odense

Plans (with RED):
- Expand SDU, Campusvej
- Move OUH
- Move SUND from WP
- Move TEK from NBA 1
- Research park
- Infra-structure
CIO summary, SDU numbers 2012

Summary of Bencheit questionnaire year 2012

Organisation: University of Southern Denmark

<table>
<thead>
<tr>
<th>Costs</th>
<th>1000 Euros</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centralised IT costs</td>
<td>10,653 t€</td>
<td>74.1%</td>
</tr>
<tr>
<td>IT costs in other central units</td>
<td>0 t€</td>
<td>0.0%</td>
</tr>
<tr>
<td>IT costs in academic units</td>
<td>2,794 t€</td>
<td>19.4%</td>
</tr>
<tr>
<td>Unspecified</td>
<td>921 t€</td>
<td>6.4%</td>
</tr>
<tr>
<td>Total IT costs</td>
<td>14,368 t€</td>
<td>100.0%</td>
</tr>
<tr>
<td>IT share of institution budget</td>
<td>423,4</td>
<td>4.2%</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Personnel</th>
<th>FTE</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centralised IT personnel</td>
<td>109.4</td>
<td>84.2%</td>
</tr>
<tr>
<td>IT personnel in other central units</td>
<td>0.0</td>
<td>0.0%</td>
</tr>
<tr>
<td>IT personnel in academic units</td>
<td>20.5</td>
<td>15.8%</td>
</tr>
<tr>
<td>Unspecified</td>
<td>0.0</td>
<td>0.0%</td>
</tr>
<tr>
<td>Total IT personnel</td>
<td>129.9</td>
<td>100.0%</td>
</tr>
</tbody>
</table>

Institution staff / IT (FTE) 26.0
Students / IT personnel (FTE) 177.1
User accounts / IT Personnel 423.4
### CIO summary, part II

#### Costs by service

<table>
<thead>
<tr>
<th>Service</th>
<th>1000 Euros</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrastructure</td>
<td>1,093 zł</td>
<td>7.6%</td>
</tr>
<tr>
<td>Workstations and peripherals</td>
<td>568 zł</td>
<td>4.0%</td>
</tr>
<tr>
<td>IT Service Desk / Helpdesk</td>
<td>65 zł</td>
<td>0.5%</td>
</tr>
<tr>
<td>Data networks</td>
<td>856 zł</td>
<td>6.0%</td>
</tr>
<tr>
<td>Voice services</td>
<td>921 zł</td>
<td>6.4%</td>
</tr>
<tr>
<td>Business applications</td>
<td>1,505 zł</td>
<td>10.5%</td>
</tr>
<tr>
<td>IT management</td>
<td>1,282 zł</td>
<td>8.9%</td>
</tr>
<tr>
<td>Audio visual services</td>
<td>39 zł</td>
<td>0.2%</td>
</tr>
<tr>
<td>Unspecified</td>
<td>8,047 zł</td>
<td>56.0%</td>
</tr>
<tr>
<td><strong>Total IT costs</strong></td>
<td><strong>14,368 zł</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

#### Number of Workstations

<table>
<thead>
<tr>
<th>Type</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal use</td>
<td>5922</td>
<td>76.3%</td>
</tr>
<tr>
<td>Student classrooms</td>
<td>543</td>
<td>7.3%</td>
</tr>
<tr>
<td>Research laboratories</td>
<td>365</td>
<td>4.7%</td>
</tr>
<tr>
<td>Other</td>
<td>131</td>
<td>1.7%</td>
</tr>
<tr>
<td><strong>Total # of workstations</strong></td>
<td><strong>7761</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>

#### Per type

<table>
<thead>
<tr>
<th>Type</th>
<th>#</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Workstations</td>
<td>3,319</td>
<td>42.8%</td>
</tr>
<tr>
<td>Laptops</td>
<td>3,866</td>
<td>49.8%</td>
</tr>
<tr>
<td>Tablets</td>
<td>555</td>
<td>7.2%</td>
</tr>
<tr>
<td>Other</td>
<td>21</td>
<td>0.3%</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>7761</strong></td>
<td><strong>100.0%</strong></td>
</tr>
</tbody>
</table>
Costdriver

- Student centered learning (SCL)
- Well maintained teaching facilities, incl. labs
- Network (1000 AP)
- 2 PB data pr. Month over network
- Wide use of ICT
- E-learning
Benchheit 2012 –
Using the results of benchmarking at Aalto University

12.6.2013
EUNIS 2013 Riga, Latvia
Tomi Lamminsalo, IT Service Excellence Leader
Aalto University in numbers

- **Customers**
  - Students: 19,993
  - Staff: 5,330
  - 6 schools
  - Stakeholders (mm. alumni, open uni students): > 80,000

- **Resources**
  - Budget
    - Centralized IT: 17,4 M € / 425,3 M €
    - Total costs of all IT in Aalto University: 30,1 M €
  - IT-staff
    - 138,7 Centralized IT FTE
    - 210,9 Total IT FTE
Visibility to actual costs 2010 - 2012

- Aalto doing BM for the first time
  - Limited financial knowledge and processes

- Learning from the first time
  - Collaboration effort with distributed IT

- Visibility to all costs
  - Costs related to facilities unclear
# Aalto IT staff and costs

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Centralized IT costs</td>
<td>12,3</td>
<td>67 %</td>
<td>16,5</td>
<td>59,4 %</td>
<td>17,4</td>
<td>57,9 %</td>
</tr>
<tr>
<td>Costs in other centralized units</td>
<td>2,0</td>
<td>6 %</td>
<td>0,8</td>
<td>2,9 %</td>
<td>2,4</td>
<td>8,1 %</td>
</tr>
<tr>
<td>Costs in academic units</td>
<td>5,0</td>
<td>27 %</td>
<td>9,7</td>
<td>35,1 %</td>
<td>10,2</td>
<td>34,0 %</td>
</tr>
<tr>
<td><strong>TOTAL IT COSTS</strong></td>
<td><strong>19,3</strong></td>
<td><strong>100 %</strong></td>
<td><strong>27,7</strong></td>
<td><strong>100,0 %</strong></td>
<td><strong>30,1</strong></td>
<td><strong>100,0 %</strong></td>
</tr>
<tr>
<td>Percentage of the university costs</td>
<td>5,1 %</td>
<td></td>
<td></td>
<td>6,8 %</td>
<td></td>
<td>7,1 %</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>IT Staff</th>
<th>2010 FTE</th>
<th>2010</th>
<th>2011 FTE</th>
<th>2011</th>
<th>2012 FTE</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centralized IT Staff</td>
<td>136,6</td>
<td>64 %</td>
<td>142</td>
<td>68,0 %</td>
<td>138,7</td>
<td>65,7 %</td>
</tr>
<tr>
<td>IT staff in other centralized units</td>
<td>9</td>
<td>4 %</td>
<td>11</td>
<td>5,2 %</td>
<td>4,5</td>
<td>2,1 %</td>
</tr>
<tr>
<td>IT staff in academic units</td>
<td>68</td>
<td>32 %</td>
<td>56</td>
<td>27,0 %</td>
<td>67,8</td>
<td>32,1 %</td>
</tr>
<tr>
<td><strong>Total IT staff</strong></td>
<td><strong>214</strong></td>
<td><strong>100 %</strong></td>
<td><strong>209</strong></td>
<td><strong>100 %</strong></td>
<td><strong>210,9</strong></td>
<td><strong>100 %</strong></td>
</tr>
<tr>
<td>IT staff percentage of total staff</td>
<td>4,5 %</td>
<td></td>
<td>4,7 %</td>
<td></td>
<td>4,2 %</td>
<td></td>
</tr>
</tbody>
</table>
### IT technology numbers

<table>
<thead>
<tr>
<th>Logical servers 2012</th>
<th>Datacenters 2011</th>
<th>2012</th>
<th>2012 m²</th>
</tr>
</thead>
<tbody>
<tr>
<td>OS</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X86 Linux</td>
<td>1288</td>
<td>73 %</td>
<td></td>
</tr>
<tr>
<td>X86 Windows</td>
<td>364</td>
<td>21 %</td>
<td></td>
</tr>
<tr>
<td>Muut (Unix, jne.)</td>
<td>113</td>
<td>6 %</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>Total</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>OS</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>X86 Linux</td>
<td>1288</td>
<td>73 %</td>
<td></td>
</tr>
<tr>
<td>X86 Windows</td>
<td>364</td>
<td>21 %</td>
<td></td>
</tr>
<tr>
<td>Muut (Unix, jne.)</td>
<td>113</td>
<td>6 %</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>34</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Datacenters</strong></td>
<td><strong>30</strong></td>
<td></td>
<td><strong>1065 m²</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Organization</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Centralized IT</td>
<td>560</td>
<td>32 %</td>
<td></td>
</tr>
<tr>
<td>Other IT</td>
<td>1205</td>
<td>68 %</td>
<td></td>
</tr>
<tr>
<td><strong>Data</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Physical servers in total</strong></td>
<td>967</td>
<td>100 %</td>
<td></td>
</tr>
<tr>
<td>In centralized IT</td>
<td>316</td>
<td>33 %</td>
<td></td>
</tr>
<tr>
<td><strong>Workstations</strong></td>
<td><strong>2080</strong></td>
<td></td>
<td><strong>2616</strong></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>11884</strong></td>
<td></td>
<td><strong>10807</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OS</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows</td>
<td>8619</td>
<td>8085</td>
<td></td>
</tr>
<tr>
<td>Linux</td>
<td>1308</td>
<td>1284</td>
<td></td>
</tr>
<tr>
<td>MacOS ja others</td>
<td>2185</td>
<td>1106</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Tyyppi</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Desktop</td>
<td>7330</td>
<td>6473</td>
<td></td>
</tr>
<tr>
<td>Laptops and other</td>
<td>4554</td>
<td>4334</td>
<td></td>
</tr>
<tr>
<td><strong>Simultaneous WLAN users</strong></td>
<td></td>
<td></td>
<td><strong>3150</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Käyttö</th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal</td>
<td>7887</td>
<td>7423</td>
<td></td>
</tr>
<tr>
<td>Classroom</td>
<td>2078</td>
<td>2185</td>
<td></td>
</tr>
<tr>
<td>Laboratory use</td>
<td>449</td>
<td>627</td>
<td></td>
</tr>
<tr>
<td><strong>Service Desk contacts per year</strong></td>
<td></td>
<td></td>
<td><strong>33788</strong></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Verkko / puhelin / muut</th>
<th>2011</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simultaneous WLAN users</td>
<td>3150</td>
<td>4361</td>
</tr>
<tr>
<td>Network / Multi-use printers</td>
<td>1353</td>
<td>831</td>
</tr>
<tr>
<td>Service Desk contacts per year</td>
<td>33788</td>
<td>35501</td>
</tr>
</tbody>
</table>
Costs by Service
All Costs

- Unspecified: 4,162 €
- Audio visual services: 1,414 €
- IT management: 3,015 €
- Business applications: 4,394 €
- Voice services: 2,205 €
- Data networks: 1,505 €
- IT Service Desk / Helpdesk: 1,473 €
- Workstations and peripherals: 6,459 €
- Infrastructure: 5,486 €
Comparing 2012 results

Aalto = Aalto University
NTNU = Norwegian University of Technology and Science
TUT = Tampere University of Technology
LUT = Lappeenranta University of Technology
UH = University of Helsinki
From Data to Actions
34 Data centers

- 2011: We discovered 20 data centers
- 2012: We discovered 34 data centers
- 2013: We discovered 30 data centers
- Projects:
  - New data center concept and migration (2013)
  - Data center consolidation project (2014 onwards)
  - Making our schools aware of the situation and work together towards more efficient solutions
Increase in Storage Requirements

• Knowledge through BM and stakeholder meetings

• Storage program initiated in 2013
  – Focus on supporting research storage requirements

• Different needs and different solutions
  – Fast storage
  – Cloud storage
  – Cheap storage
  – Secure storage
  – Metadata management and data lifecycle
Inrease in Mobility

• **Big increase in mobile devices**
  – Changing fixed lines into mobile phones
    • 75% of new phones are smartphones
  – Mobile platform support (m.aalto.fi)

• **Network renewal program**
  – Changing network architecture to support the increased need
  – New network architecture (4 IP addresses per person)
Incident Management Efficiency

• Need to increase incident management efficiency
  – Project to improve incident management efficiency and tools.

• Need to build a common model with our schools
  – Common process
  – Common tools
  – Transparency across organization boundaries
  – More collaboration

• Incident Management project 2013 - 2014
Summary

- IT has taken a lot of work and learning to get doing benchmarking well.
- Still learning!
- Benchmarking is an excellent tool for initiating discussion towards university level IT collaboration.
- You find it easier to get buy-in for important projects that you know you need to do NOW.