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GLOBAL UNIVERSITY RANKINGS AND THEIR IMPACT

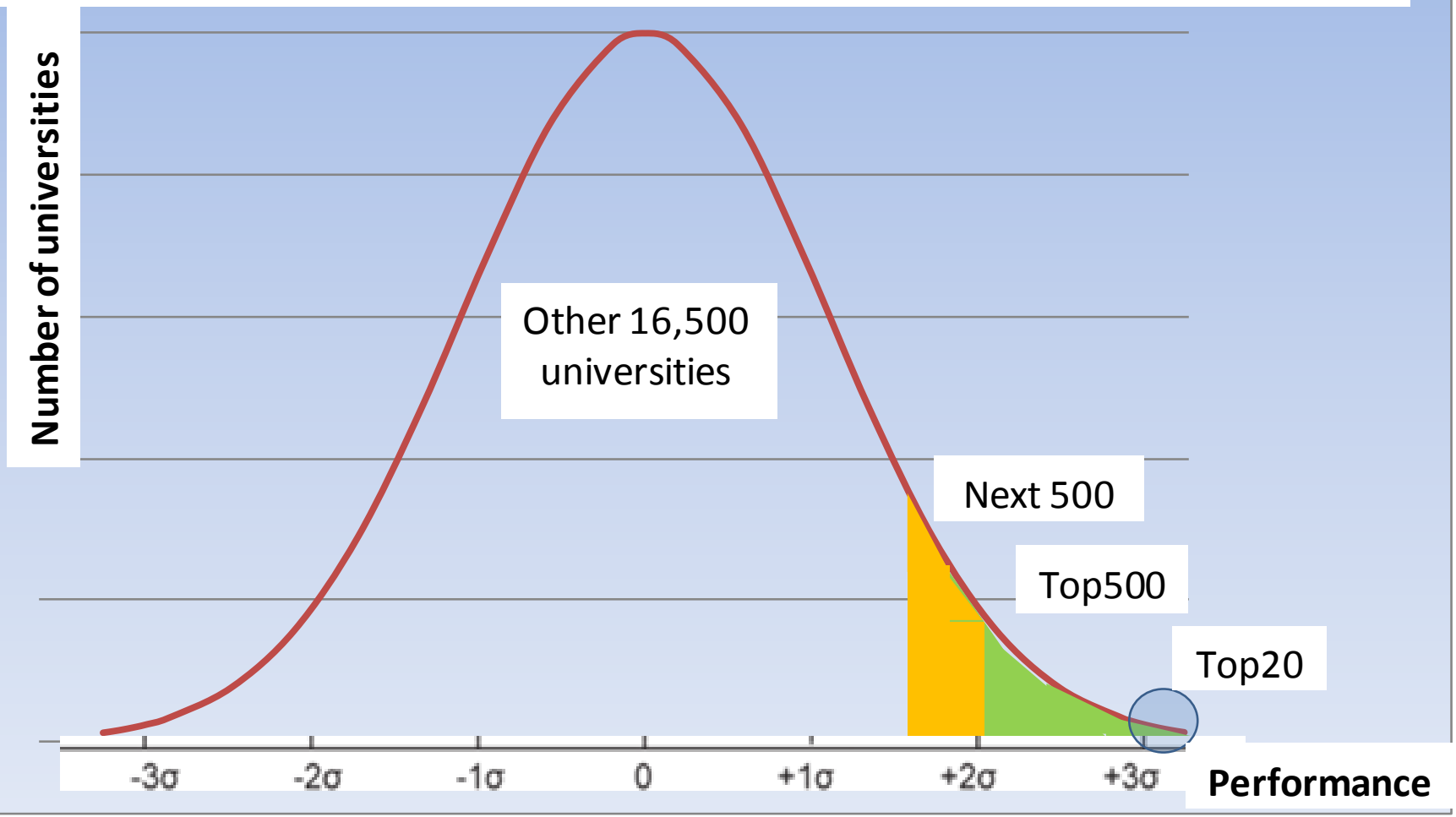
Andrejs Rauhvargers

http.//www.eua.be

Purpose and principles of review

- Addresses the most popular global university rankings
- Providing universities with analysis of the methodologies
- Only publicly accessible information was used
- Efforts were made to discover
  - ✓ what is actually measured,
  - ✓ how the scores for indicators are calculated
  - ✓ how the final scores are calculated, and
  - ✓ what the results actually mean.

Global rankings cover not more than 3-5% of world's universities



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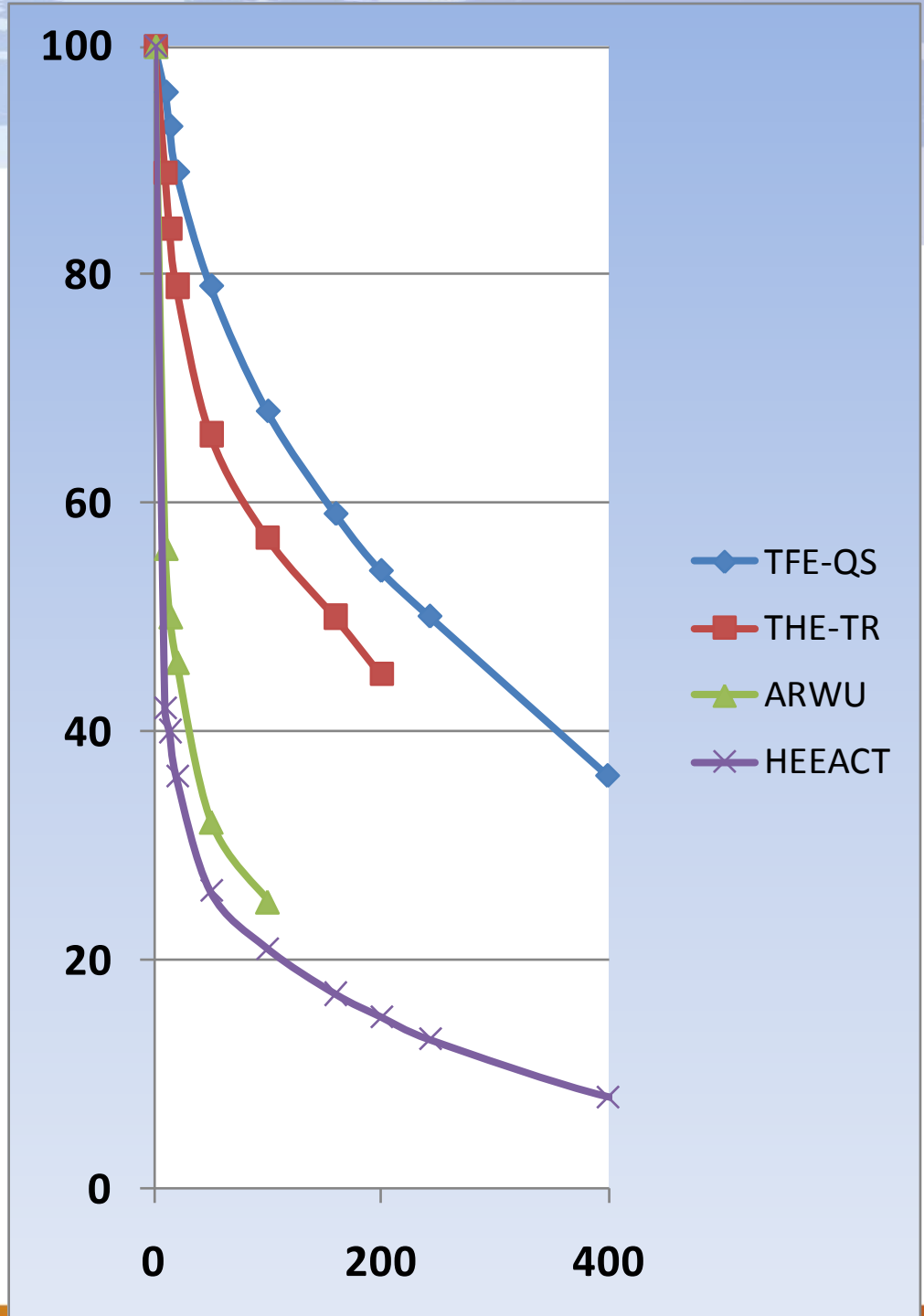
Decrease of scores within the Top 400 universities

How big can be the scores of remaining for 16’600 universities?



Indicators covering elite research universities only

- "Quality of faculty" = staff winning Nobel prizes (Shanghai-ARWU)
- "Highly Cited" = belonging to worlds Top 200 in 21 areas, i.e. 4200 altogether (ARWU)
- "Peer review" = nominating 30 best universities from pre-selected list (QS-based rankings)
- Teaching reputation survey(s) = nominating 30 best (QS-based, THE-TR)
- Universities considered: pre-selection from elite group of universities: ARWU, THE, Leiden

Indicator scores are usually not the indicator values themselves

Each indicator has a dimension or denominator, e.g.: articles count, staff numbers, citations per academic

To make indicator scores dimensionless, either

- values are expressed as percentage of the result of the "best" university

$$\text{Score} = \frac{R_x}{R_{best}} \times 100$$

- *Z-score* is calculated as being the difference between the measure x and the mean value X divided by standard deviation σ:

$$Z = \frac{x - X}{\sigma}$$

Simple arithmetics have huge influence on scoes

- Where a composite score is calculated from several indicators, ranking providers assign weights to each indicator in the overall score.
- This means that the **ranking provider's subjective judgement determines which indicators are more important** (e.g. citations – 10%, reputation – 40%)
- If a ranking predominantly uses absolute values (ARWU, Webometrics), its scores are size-dependent, i.e. the ranking favours large universities.

Can rankings assess quality of the research mission of universities? Indicators:

- Publication count SCI &SSCI, Scopus: - production
- Publication count in *Nature* & *Science* - excellence
- Publications per staff - staff research productivity
- Citations (count) – overall force of HEI
- Citations - per paper or per staff - impact
- Citations to articles in the top impact journals – excellence
- Research income
- Research reputation surveys

But there are also biases and flaws …

Rankings and the teaching. Indicators:

- Alumni who have been awarded a Nobel Prize
- Staff/Student ratio
- Reputation surveys (academics, students, employers)
- Teaching income
- Dropout rate
- Time to degree
- PhD/ undergraduate ratio

  All of the above are distant proxies, some questionable

- Learning outcomes – *are we there yet*?

BIASES AND FLAWS

Natural sciences and medicine vs. social sciences and humanities bias

- Bibliometric indicators primarily cover journal publications and conference proceedings
  - ✓ Natural and life scientists primarily publish in journals,
  - ✓ Engineering scientists - in conference proceedings,
  - ✓ Social scientists and humanists – in books

  Several indicators count by *21 broad area*

21 broad subject areas as defined by ISI

1. Agricultural Sciences
2. Biology & Biochemistry
3. Chemistry
4. Clinical Medicine
5. Computer Science
6. Ecology/Environment
7. Economics & Business
8. Engineering
9. Geosciences
10. Immunology
11. Materials Science
12. Mathematics
13. Microbiology
14. Molecular Biology & Genetics
15. Neuroscience
16. Pharmacology
17. Physics
18. Plant & Animal Science
19. Psychology/Psychiatry
20. Social Sciences, General
21. Space Sciences

Different publication and citation cultures in different fields

	Papers per faculty	Citations per faculty
Biological Sciences	7.62	59.62
Physical Sciences and Mathematics	6.39	31.94
Engineering	6.04	17.83
Social and Behavioral Sciences	2.14	5.47
Arts and Humanities	Unknown	Unknown

- *Source: presentation of Cheng at IREG 2010 conference in Berlin*

Field normalisation - solutions and issues

Field-normalised citations per publication indicator (Leiden 'Crown indicator')

$$\frac{CPP}{FCSm} = \frac{C_1 + C_2 + C_3 \ldots}{e_1 + e_2 + e_3 \ldots}$$

C_i is the number of citations of the publication *i*

e_i is the expected number of citations of publication *i* given the field and the year

Criticisms – prefers older publications,

- blurs the picture

Mean-normalisation - solutions and issues

- New attempt (2010) - mean-normalised citation score (MNCS)

$$MNCS = \frac{1}{P} * \left(\frac{C_1}{e_1} + \frac{C_2}{e_2} + \frac{C_3}{e_3} + \cdots \right)$$

- Good idea, **but**: now the results are unstable for the very newest publications
- To avoid the new flaw MNCS indicator is used which **leaves out** publications of the last year
- And then it appears that a single publication may substantially change univerity's ccore
- But after all, it just improves mathematics, not the issue that WoS and Scopus insufficiently cover books

'Peer review' biases and flaws

- Why calling reputation surveys "Peer reviews"?
- 'Peers' are influenced by previous reputation of the institution (including positions in other rankings)
- Limiting the number of universities nominated (THE, QS based rankings) makes approach elitist – and strengthens previous reputation dependence
- Using pre-selected lists rather than allowing 'peer's' free choice results in leaving out huge numbers of institutions
- Is 5-10 % response rate a sufficient result?
- How does opinion survey work when used internationally?

The risks of overdoing

- Rankings encourage universities to improve their scores
- Universities are tempted to improve performance specifically in areas measured in rankings
- There are risks that universities will concentrate funds and efforts to the above aspects and pay less attention to issues that are not rewarded in ranking scores such as:

  quality of teaching, regional involvement, widening access, lifelong learning, social issues of students and staff etc.

Can rankings be improved?

- There will be no improvement from extending 5 distant proxies to 25 – they will still remain proxies...
- Improve coverage of teaching – most probably through measuring learning outcomes,
- Lift biases, eradicate flaws of bibliometric indicators: field, language, regional,

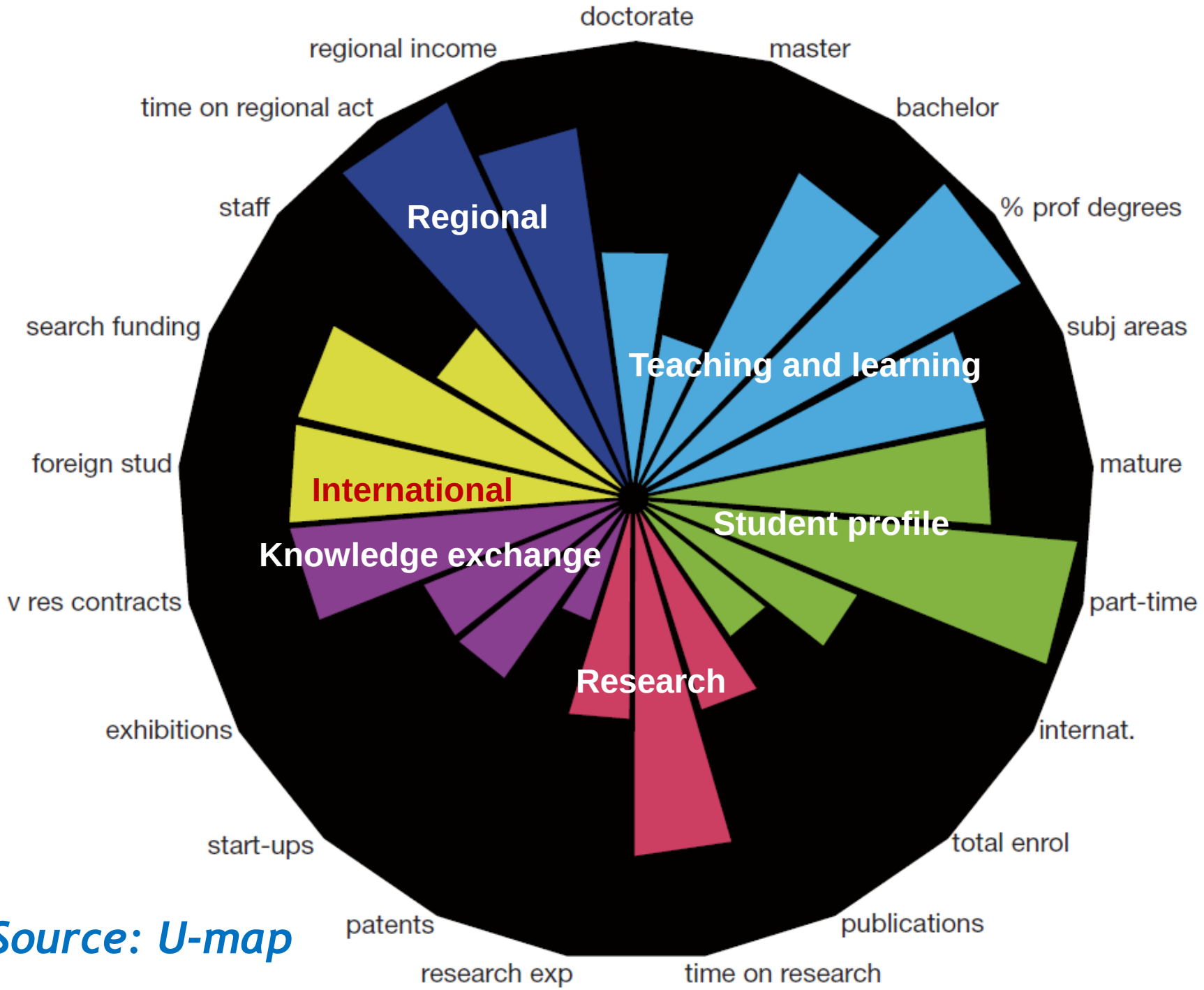
  but first of all – address non-journal publications properly!
- Change rankings so that they in reality *help students* to make their choices.
- Addressing elite only, ranking results impact life all universities – it is time to produce rankings that cover more universities!

The new developments: classifications, multi-indicator tools and comparing learning outcomes

U-map classification profiles (EU)

Neutral process indicators –
not for value judgments or ranking

- Teaching and learning –
  levels and orientation of degrees, subject range
- Student profile - mature, distance, part-time,
- Research activity,
- Knowledge exchange,
- International orientation,
- Regional engagement.


doctorate
master
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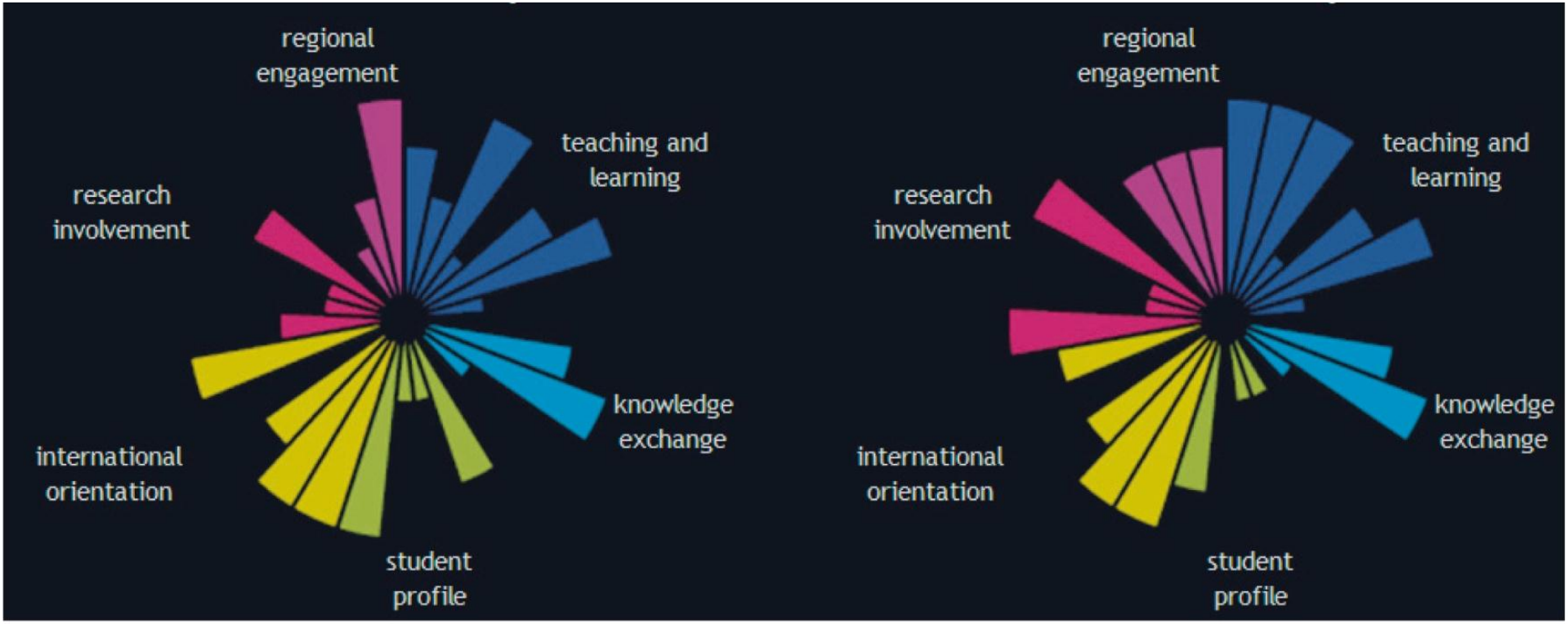
regional income
Regional
Teaching and learning
Student profile
Research
Knowledge exchange
International

Source: U-map

The new developments: U-map

- U-Map has two visualisation tools allowing to classify HEIs and to make detailed comparison of selected HEIs.



U-map classification

333 universities have U-map profiles:

- EU – 291
- non-EU European - 16
- Other parts of the world – 26

Goal for 2013: 1000 universities in U-map

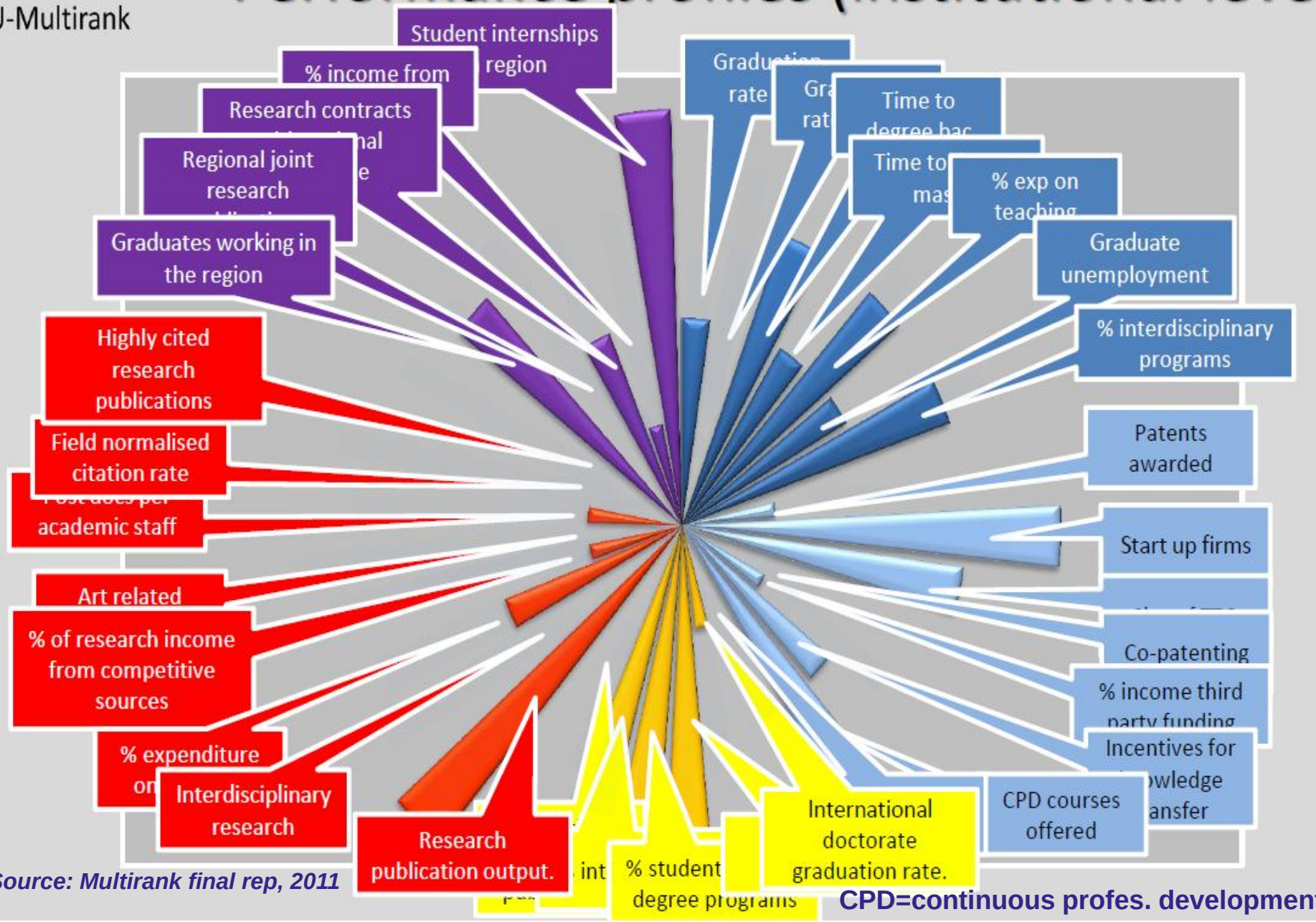
Threats:

- Using self-reported data on international level
- Funding

Multi-indicator tool U-Multirank (EU)

- **Performance indictors**
- **Ranking based on one indicator, scores in other indicators displayed**
- **No overall score calculated**

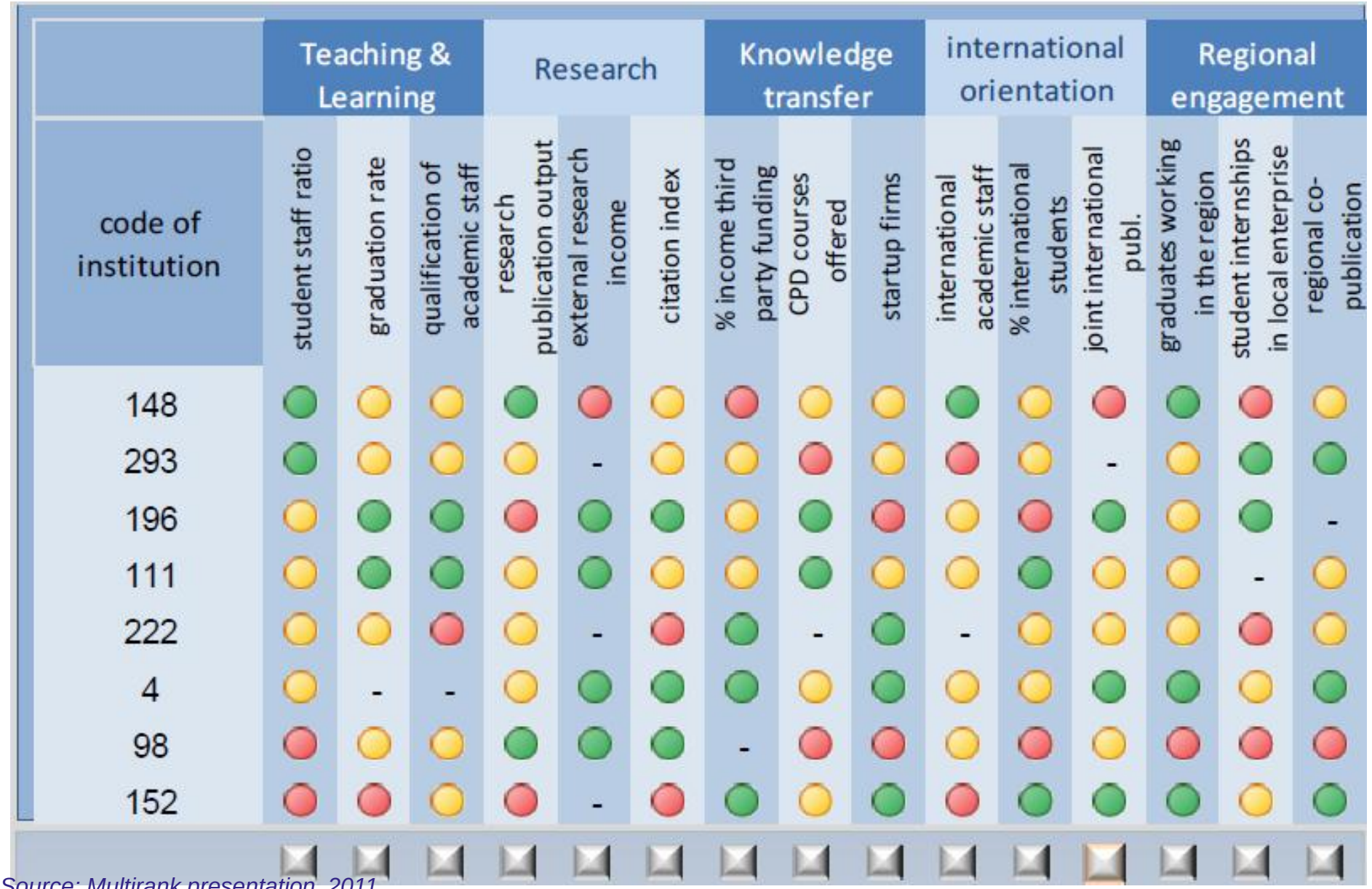
Performance profiles (institutional level)



Source: Multirank final rep, 2011

CPD=continuous profes. development

Multirank: default set of 15 indicators



Source: Multirank presentation, 2011

«personalizing» the ranking

Teaching & learning

- ☐ student staff ratio
- ☐ graduation rate
- ☐ investments in laboratories
- ☐ qualification of academic staff
- ☑ rel. graduate unemployment rate
- ☐ interdisciplinarity of programs
- ☐ inclusion of employability issues
- ☑ inclusion of work experience in program
- ☐ computer facilities: internet access
- ☐ student gender balance

Teaching & learning; *student satisfaction*

- ☐ overall judgement of program
- ☐ evaluation of teaching
- ☑ facilities (libraries)
- ☑ facilities (IT)
- ☐ organisation of program
- ☐ research orientation of ed. program
- ☑ inclusion of work experience
- ☐ quality of courses
- ☐ social climate
- ☐ support by teachers
- ☐ opportunities to stay abroad

Research

- ☐ external research income
- ☐ research publication output
- ☐ doctorate productivity
- ☐ field normalised citation rate
- ☐ highly cited research publications

Knowledge transfer

- ☐ ac. staff with non-HE experience
- ☐ joint research contracts priv sector
- ☐ university-industry joint publications

Source: Multirank presentation, 2011

International orientation

- ☑ incoming and outgoing exch students
- ☑ international orientation of programs
- ☐ international academic staff
- ☐ international research grants
- ☐ international joint research publ.
- ☐ % international students
- ☐ internat doctorate graduation rate

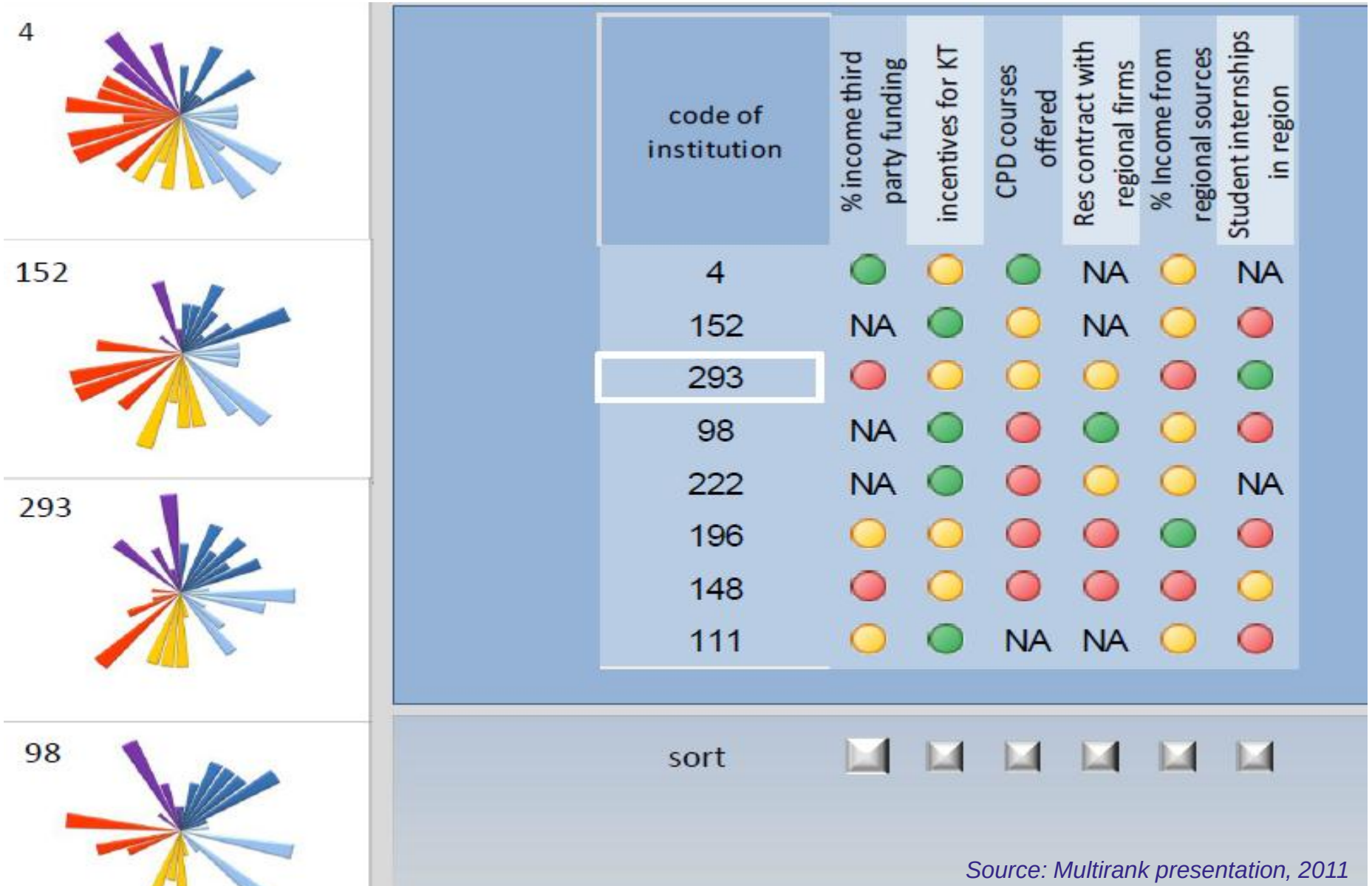
Regional engagement

- ☐ graduates working in the region
- ☐ degree theses with reg. enterprise
- ☐ regional participation in continuing ed.
- ☐ summer schools sec.ed.students
- ☑ student internships in region

Full use of combined U-Map + Multirank

1) using U-map (neutral indicators) select a group of HEIs
2) compare the selected group of HEIs by Multirank using personalized set of performance indicators

This is the result of the personalized comparison of pre-selected group of HEIs



Source: Multirank presentation, 2011

Name of institution: 293

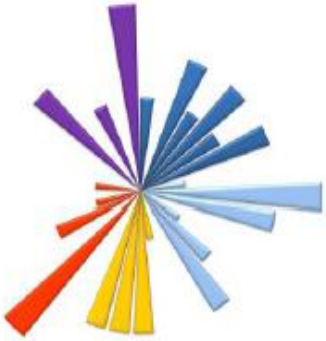
Address

URL

Mission statement

U-Map profile

U-Multirank profile



Source: Multirank presentation, 2011

U-Multirank

Concerns/threats

- There are still no sufficient performance indicators for teaching and learning
- How well self-reported will work in international context
- how well student satisfaction data will work in international context,
- whether other parties will turn Multirank into a league table and what will be the consequences

The new developments: AHELO

- OECD's AHELO project is an attempt to compare HEIs internationally on the basis of actual learning outcomes.
- Three testing instruments will be developed within AHELO: one for measuring generic skills and two for testing discipline-specific skills, in economics and engineering.
- Questions yet to be answered are: whether it is possible to develop instruments to capture learning outcomes that are perceived as valid in diverse national and institutional contexts.

New visualisations of global rankings incl. clasifications and multi-indicator tools

- ARWU «Rankings Lab»: posibility to chose indicators and asign various weights
- ARWU GRUP Global Research University Profiles self-submitted data collection, 231 universities
- ARWU «Ranking by indicator(22)»: resembles Multirank
- ARWU- field
- Times Higher Education - subject rankings
- Times Higher Education - «Lab» tool

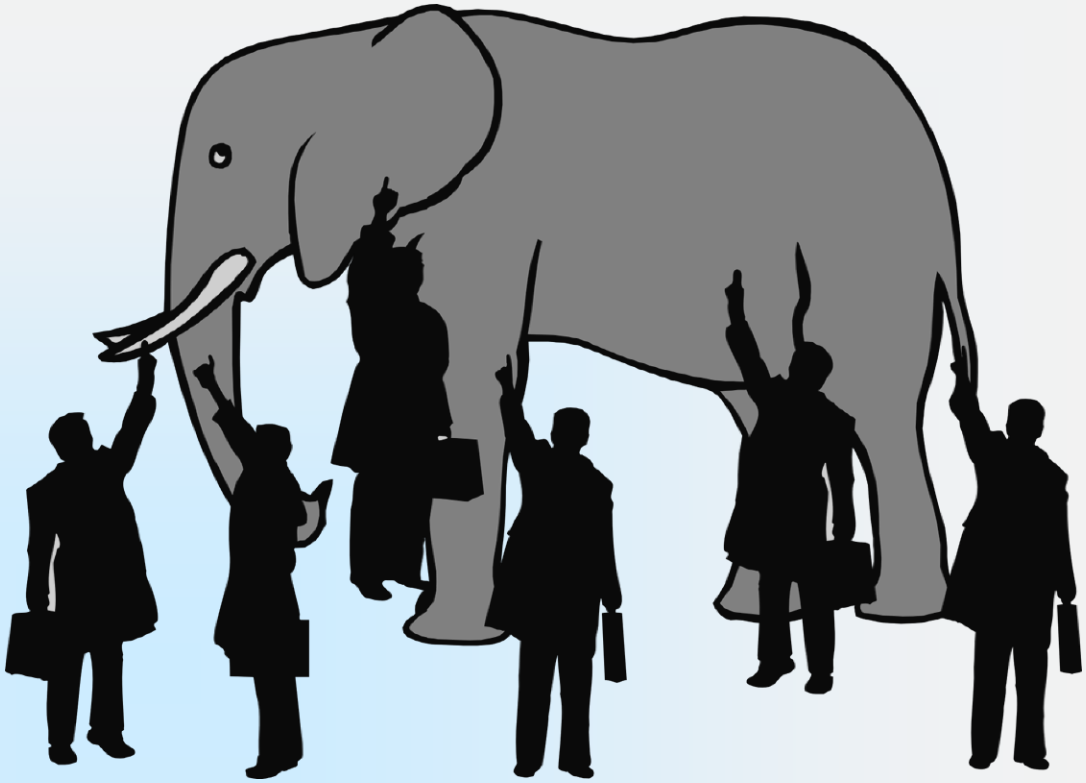
New visualisations of global rankings incl. clasifications and multi-indicator tools

- Thomson-Reuters The Profiles Project (reputation, funding, faculty characteristics
- QS subject rankings – 33 of 52 subjects ranked already
- QS Classifications (size, subject range, research intensity, age of university
- QS Ranking by indicator («multirank»)
- QS «stars»: (8 criteria)
- QS Country Guides

Main conclusions

1. Since arrival of global rankings then universities cannot avoid national and international comparisons, and this has caused changes in the way universities function.
2. Rankings so far cover only some of university missions. Lack of suitable indicators is most apparent when measuring teaching performance. The situation is better when evaluating research, but even the bibliometric indicators have their biases and flaws.
3. At present, it would be difficult to argue that the benefits that rankings provide are greater than the negative effects of the so-called 'unwanted consequences' of rankings.
4. **Higher education policy decisions should not be based solely on rankings data.**

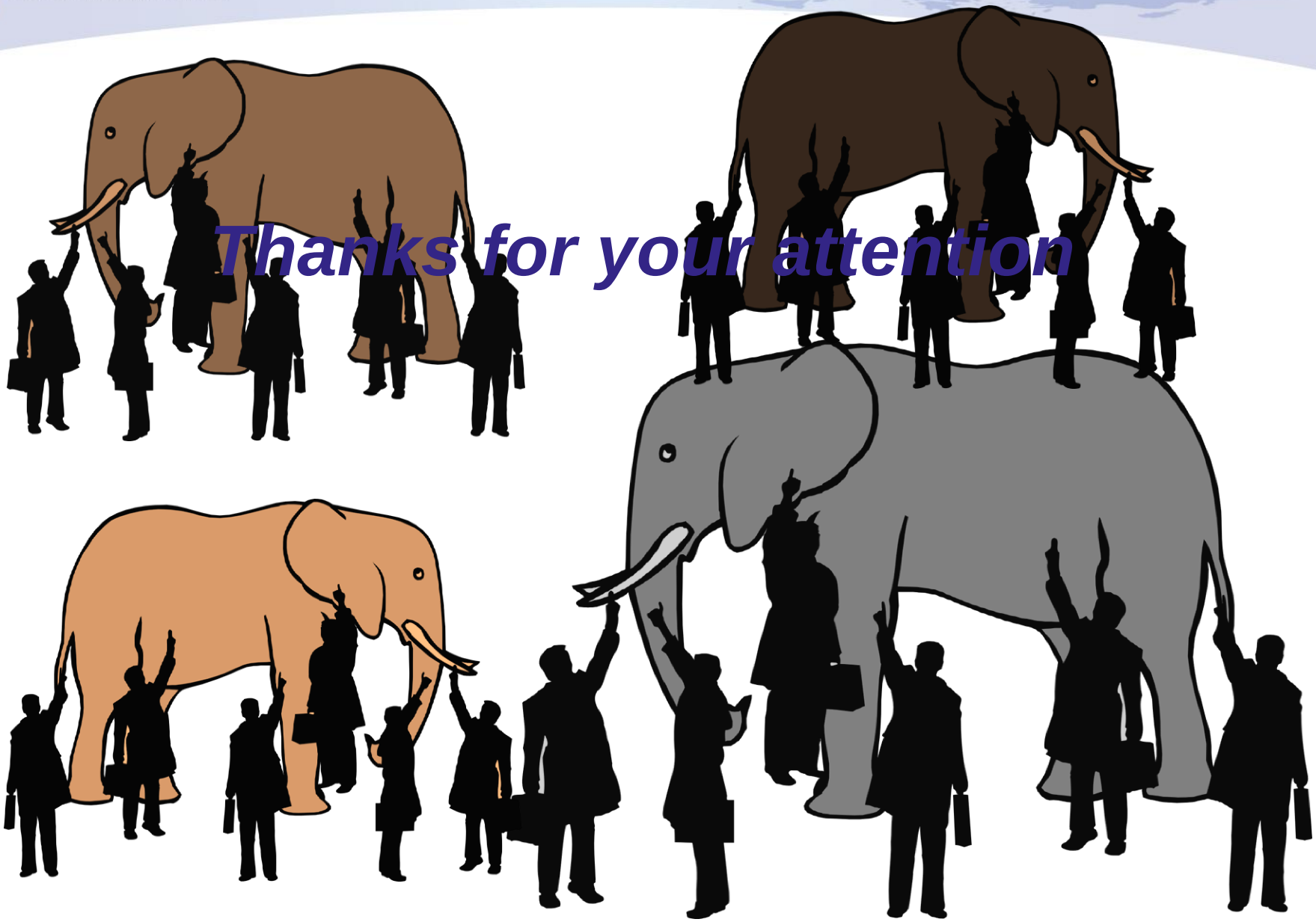
The elephant is here to remind that information we get from ranking indicator may be correct but it is still partial



Each in his own opinion
Exceeding stiff and strong,
Though each was partly in the right,
And all were in the wrong!

by John Godfrey Saxe (1816–1887)

Thanks for your attention



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