Results from the first release of U-Multirank: presentation and discussion

Ben Jongbloed (CHEPS, University of Twente - on behalf of the U-Multirank consortium)

Introduction

In comparison to more homogenous systems, diversified higher education systems are argued to be more responsive, effective and innovative. This is one of the reasons why the attention for diversity has rapidly moved up the political agenda in European higher education (EC, 2011). So has attention for rankings, classifications and other ways to capture the multi-faceted activities and performances of higher education institutions (HEIs). Students, policy-makers and other stakeholders in higher education are in particular interested in what HEIs have to offer (the wish for transparency) and whether what they offer is in one way or another better than what other HEIs or other countries offer (the performance and/or accountability dimension).

U-Multirank addresses the question of how well HEIs are performing on the various dimensions of their individual mission (or *profile*). An international consortium including CHE, CHEPS, CWTS, INCENTIM, academic publishers Elsevier, the Bertelsmann Foundation and software firm Folge 3, supported by individual experts and stakeholders organisations, has worked on U-Multirank from 2013 onwards, based on the results of an earlier feasibility study (CHERPA Consortium, 2011). Where most existing rankings largely focus on only one or very few dimensions of the broad spectrum of functions of HEIs - primarily the research function - U-Multirank distinguishes five dimensions: Teaching & Learning, Research, Internationalisation; Knowledge Transfer and Regional Engagement.

This paper focuses on the first results of a new multidimensional ranking tool, U-Multirank. U-Multirank (Van Vught & Ziegele, 2012) is a multi-dimensional, user-driven approach to international ranking of HEIs. The initiative is funded by the European Commission (EC).The official release of U-Multirank – with the first ranking results – took place in May 2014. The design of U-Multirank builds on a feasibility study (CHERPA Consortium, 2011) which was carried out on 150 HEIs from Europe and around the world. That study confirmed that both the concept and implementation of a multi-dimensional ranking were largely realistic.

In this paper we will discuss the following:
1. The underlying principles of U-Multirank
2. The HEIs considered for U-Multirank and the data collected for them
3. Results from the first release of U-Multirank

Underlying principles

Multidimensionality – it is not just research that counts for assessing performance. An obvious corollary to multidimensionality is that institutional performance on these different dimensions should not be aggregated into a composite overall measure. There is neither theoretical nor empirical justification for assigning specific weights to individual indicators and aggregating them into composite indicators.

The underlying principle of U-Multirank is that rankings should be made only of HEIs that are comparable in terms of their profile or mission. Institutions and programmes should only be compared when their purposes and activity profiles are sufficiently similar. It makes no sense to compare the research performance of a major metropolitan research university with that of a remotely located University of Applied Science; or the internationalisation achievements of a national humanities college whose major purpose is to develop and preserve its unique national language with an internationally oriented UK university with branch campuses in Asia. Therefore, before the user employs U-Multirank to rank institutions or programmes, he/she should make a selection of HEIs based on a number of 'mapping indicators' that define the subset of HEIs of which performance will be compared. Only then the user will proceed to the next stage: how well are HEIs performing in the context of their institutional profile?

U-Multirank refrains from the use of composite indicators, as it blurs differences in performance across particular dimensions and indicators. Studies (e.g. Dill & Soo, 2005) show that the weighting systems underlying composite indicators are anything but robust. The selection of dimensions and indicators was based on two processes:

- *Stakeholder consultation process*: An intensive process of stakeholder consultation focused primarily on the *relevance* of potential dimensions and indicators which should be the starting point for rankings.
- *Methodological analysis* of the *validity* of the indicators, the *reliability* of the information to be gathered, and the expected *feasibility* of the use of the dimensions and indicators (availability of data; the data collection burden for HEIs).

Users will have the option to select indicators according to their own preferences and thereby compile a personalised ranking. U-Multirank does not provide over-simplified league tables. U-Multirank leaves the decision about the relevance of indicators to its users who may have different preferences and priorities. U-Multirank encourages its users to compare like with like and will only compare institutions with similar missions (i.e. profiles).

U-Multirank sample, data and indicator scores

U-MR is not just directed at the large, comprehensive, internationally orientated research universities but also accommodates teaching-oriented, regionally engaged and specialized HEIs. This is a way of democratizes the rankings – in contrast to other ranking initiatives.

The first U-Multirank edition in 2014 will cover a minimum of 500 HEIs from around the world. Although initially more than 700 HEIs registered for U-Multirank, quite a few withdrew or dropped out during the data collection process. The main reasons for drop-out were internal (mergers, change of president, structural changes in administration, etc.) and the work overload in the HEI (scarce staff resources, parallel evaluations/accreditations). However, also cited were the complexity of data provision and the large amount of data asked for. Many institutions said they consider participation next year though.

Data is collected based on:
- an institutional survey collecting data on the whole institution for institutional ranking (including mapping indicators): The institutional questionnaire is used to collect data from institutions, including material on student enrolment, programmes and continuous professional development courses, graduation rates and graduate employment, staff, incomes and expenditure, research and knowledge transfer.

- field-based surveys, collecting data on the faculties/departments in the four fields. Data refer to staff categories, those with doctorates, post-docs, funding, students and regional involvement, as well as the accreditation status, teaching profile and research profile of departments, including characteristics such as programme duration, work experience, courses taught in foreign languages, the number of graduates and labour market entry data.
- a student survey on the students' learning experience in the four fields, that aims to measure student satisfaction in various aspects of teaching and learning.

U-Multirank data sources also comprise bibliometric data for research indicators taken from CWTS and the Thomson Reuters Web of Science database. Patents data is retrieved from the European Patent Office (EPO) and PATSTAT.

The process of collecting data from the institutions themselves requires intense communication with participating institutions. After collecting the data, indicator scores are calculated. These are inspected and checked for outliers. Institutions then are ranked into a number of different rank groups for each indicator as follows: For each indicator we calculate the median score and inspect the distribution of the scores. U-Multirank then assigns indicator scores to ranking groups, using five groups: a zero group, a bottom group, a below median group, an above median group and an upper group.
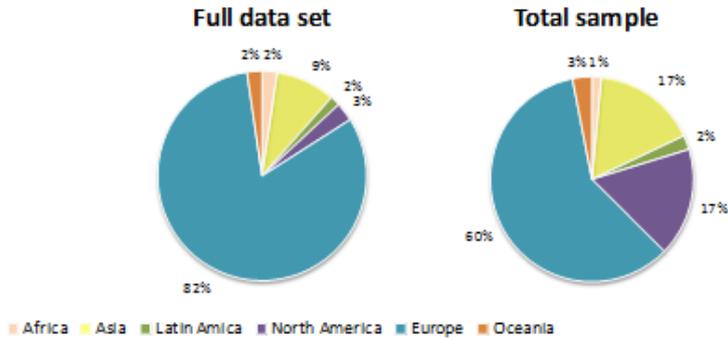
First results

U-Multirank is a unique tool for comparing university performance. It currently includes information on more than 850 higher education institutions, more than 1,000 faculties and 5,000 study programmes from 70 countries. This is an impression of the institutions that are included:
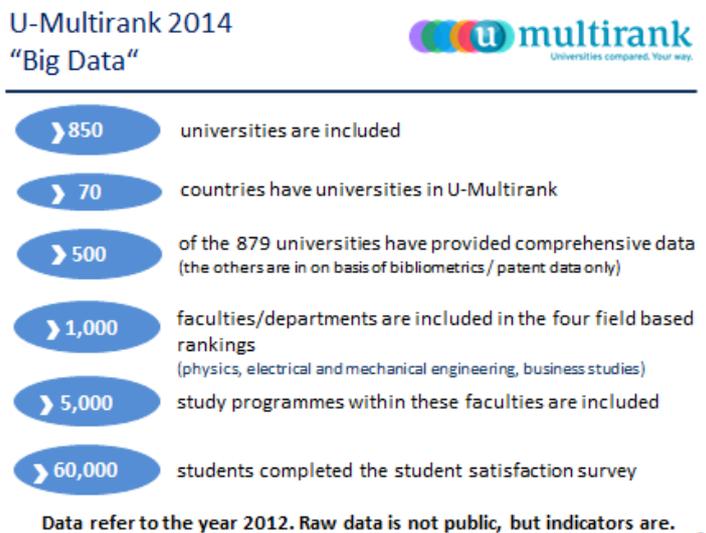
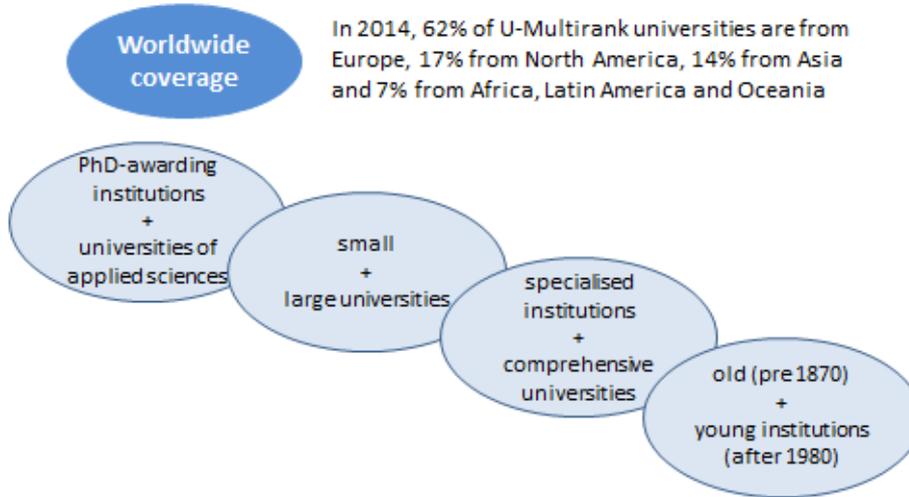Below is a chart showing where the institutions come from:

Final sample of U-Multirank institutions by region

Full data set

2% 2% 9% 2% 3% 82%

Total sample

3% 1% 17% 2% 17% 60%

■ Africa ■ Asia ■ Latin Amica ■ North America ■ Europe ■ Oceania

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U-Multirank is one of the first international comparison to include all types of higher education institutions. The institutions included are a very diverse set:

U-Multirank offers a global view of a large variety of university profiles

Worldwide coverage

In 2014, 62% of U-Multirank universities are from Europe, 17% from North America, 14% from Asia and 7% from Africa, Latin America and Oceania

PhD-awarding institutions + universities of applied sciences

small + large universities

specialised institutions + comprehensive universities

old (pre 1870) + young institutions (after 1980)

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U-Multirank takes a different approach to existing global rankings of universities; it is multi-dimensional and compares university performance across a range of different activities grading them from "A" (very good) to "E" (weak). It does not produce a league table of the world's "top" 100 universities based on composite scores. Instead, it allows users to identify a university's strengths and weaknesses, or the aspects that most interest them.

U-Multirank enables users to compare particular sorts of universities ("like with like") in the areas of performance of interest to them. It indicates how universities perform by showing their position in five performance groups (A="very good" through to E="weak") in each of 30 different areas. While comparisons using U-Multirank are user-driven, it does include three "readymade" rankings – on research, on the strengths of universities' economic involvement and on Business Studies

programmes. The wide range of new indicators of performance cover five broad dimensions: teaching and learning, regional engagement, knowledge transfer, international orientation and research. Students and other stakeholders have played a major role in developing U-Multirank and the ranking has been tested by student organisations.

U-Multirank allows users to see both the strengths and weaknesses of a specific university. Users have different preferences with regard to the relevance of performance measures. Depending on their personal selection of measures different institutions will perform better than others. The calculation of performance groups for each measure is based on the whole sample of institutions. Performance on the chosen measures is shown in tables where the user can sort the selected institutions in different ways (by the number of top "A" scores, by performance on a specific measure or simply alphabetically by university name). The scores are represented by circles in the web-tool: the bigger the circle, the higher the score.

Below is an example of a university ranking – highlighting some indicators for the areas of Teaching & Learning, Research and Knowledge Transfer.

U-Multirank's *readymade rankings* look at a set of institutions that have a particular, pre-defined institutional profile and for these institutions shows the results for a pre-defined set of indicators. For instance, the Research and Research Linkages readymade ranking looks at PhD awarding institutions and shows their scores on a set of seven indicators dealing with research output (publications output, citation rate, top-cited papers, co-publications, international joint publications and co-publications with regional partners.

Below is one of the Readymade Rankings.

Research and research linkages ranking

u multirank — Universities compared. Your way.

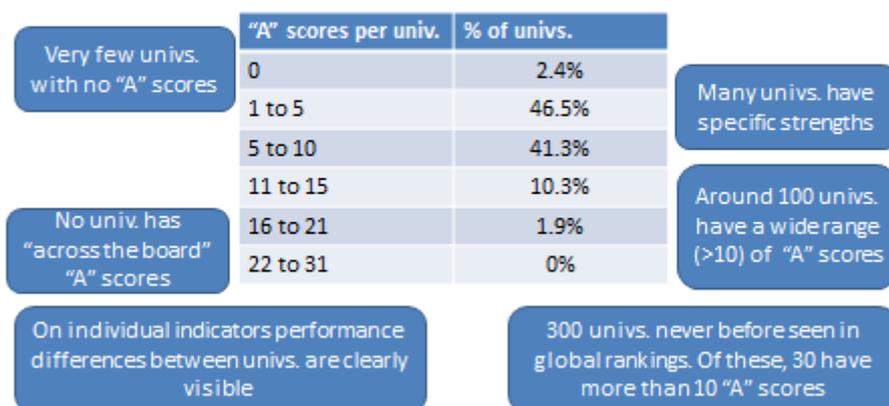| 2 Research and Research Linkages Ranking		Research				Knowledge Transfer	International Orientation	Regional Engagement
		Citation rate	Research publications (absolute numbers)	Research publications (size-normalised)	Top cited publications	Co-publications with industrial partners	International joint publications	Regional joint publications
U California Santa Cruz	US	●	●	●	●	●	●	·
U Siegen	DE	●	·	·	●	●	●	·
MIT	US	●	●	●	●	●	●	●
Princeton U	US	●	●	●	●	●	·	·
U California Berkeley	US	●	●	●	●	●	·	●
Stanford U	US	●	●	●	●	●	·	●
U Chicago	US	●	●	●	●	·	·	▪
Caltech	US	●	●	●	●	●	●	·
Harvard U	US	●	●	●	●	●	·	●
London Sch. Hygiene & TropMed.	GB	●	·	●	●	·	●	●
U California, Santa Barbara	US	●	●	●	●	●	●	·
U California San Francisco	US	●	●	●	●	●	·	●

U-Multirank shows the performances of the institutions as a whole but also ranks them in selected academic fields: in 2014 the fields are business studies, electrical engineering, mechanical engineering and physics; in 2015 psychology, computer science and medicine will be added.

Before coming to a ranking, a profile is chosen by the user of U-Multirank. This is what we call 'mapping' and it relates to the selection of institutions that have particular characteristics, thus allowing a comparison of like-with-like (not comparing apples and oranges).

U-Multirank results show that while over 95% of institutions achieve an "A" score (very good) on at least one measure, only 12% of the institutions show a broad range of very good performances (more than 10 "A" scores). This diversity of performance has not been shown before in any international ranking. See below:

U-Multirank shows a wide distribution of "A" scores!

multirank — Universities compared. Your way.

Very few univs. with no "A" scores

"A" scores per univ.	% of univs.
0	2.4%
1 to 5	46.5%
5 to 10	41.3%
11 to 15	10.3%
16 to 21	1.9%
22 to 31	0%

Many univs. have specific strengths

No univ. has "across the board" "A" scores

Around 100 univs. have a wide range (>10) of "A" scores

On individual indicators performance differences between univs. are clearly visible

300 univs. never before seen in global rankings. Of these, 30 have more than 10 "A" scores

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Different universities show top performances in different indicators

multirank — Universities compared. Your way.

80 universities from the total sample of 879 achieved *a score in the top five* on at least one of the 30 indicators.

8 of these 80 universities achieved *a score in the top five* on three or more indicators (the highest is one university with six such scores)
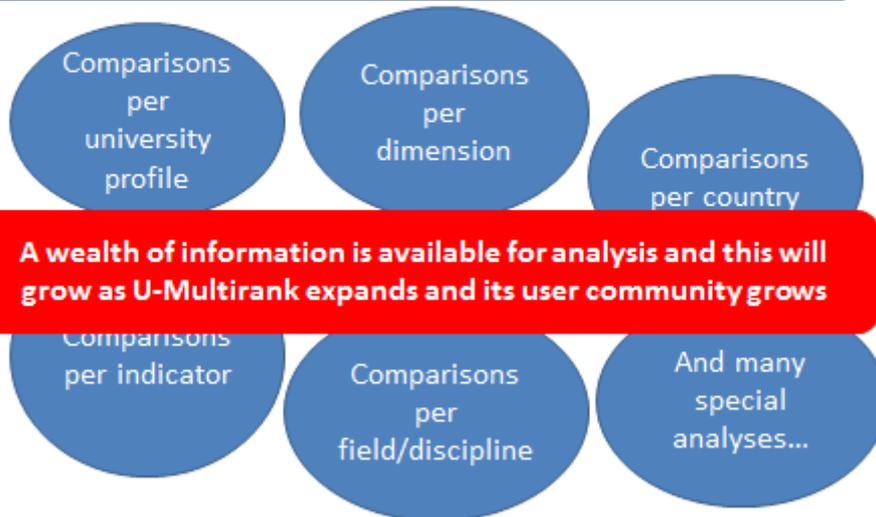
4 of these 8 universities have not been visible before in global rankings
An Austrian University of Applied Science
A private US Christian University
A private German Business School
A French Management Grande École

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U-Multirank is based on a methodology that reflects both the diversity of higher education institutions and the variety of dimensions of university excellence in an international context. The data included in U-Multirank are drawn from a number of sources, providing users with a comprehensive set of information: information supplied by institutions; data from international bibliometric and patent data bases; and surveys of more than 60,000 students at participating universities - one of the largest samples in the world and offering students a unique peer perspective. This means that U-Multirank offers a wealth of information and allows for a large number of comparisons:

U-Multirank offers a wealth of information and the potential for many more analyses

multirank Universities compared. Your way.

- Comparisons per university profile
- Comparisons per dimension
- Comparisons per country
- Comparisons per indicator
- Comparisons per field/discipline
- And many special analyses…

A wealth of information is available for analysis and this will grow as U-Multirank expands and its user community grows

The indicators for the institutional-level and field-level cover five dimensions. They are shown in the next five pictures:

Indicators at institutional and field levels

multirank Universities compared. Your way.

	Institutional ranking	Field-based rankings
TEACHING & LEARNING		
Student-staff-ratio		•
Graduation rate (BA ; MA)	•	
Percentage of academic staff with PhD		•
Percentage of graduates graduating on time (BA; MA)	•	•
Rate of graduate unemployment ('descriptive indicator')	(•)	(•)
Contact with work environment (BA; MA)		•
Indicators from the student survey		
Overall learning experience		•
Quality of courses & teaching		•
Organisation of program		•
Contact with teachers		•
Facilities (libraries, rooms, IT, laboratories)		•
Research orientation of teaching/programme		•
Inclusion of work experience /practical elements		•

Indicators at institutional and field levels

multirank
Universities compared. Your way.

indicator * : based on bibliometrics data	Institutional ranking	Field-based rankings
RESEARCH		
External research income (per fte academic staff)	●	●
Doctorate productivity		●
Research publications (size normalized) *	●	
Research publications (absolute numbers) *	●	●
Art related output	●	
Field-normalised citation rate*	●	●
Highly cited research publications *	●	●
Interdisciplinary research publications*	●	●
Research orientation of teaching (student survey)		●
Number of post-doc positions	●	●

Indicators at institutional and field levels

multirank
Universities compared. Your way.

indicator * : based on bibliometrics or patent data	Institutional ranking	Field-based rankings
KNOWLEDGE TRANSFER		
Income from private sources (research contracts, service contracts, licenses etc.) per academic staff	●	●
Co-publications with industrial partners *	●	●
Patents awarded (size normalised) *	●	
Patents awarded (absolute numbers) *	●	●
Industry co-patents (per fte academic staff) *	●	
Number of spin-offs (per 1000 academic staff)	●	
Publications cited in patents *	●	●
Revenues from Continuous Professional Development	●	

Indicators at institutional and field levels

multirank — Universities compared. Your way.

	Institutional ranking	Field-based rankings
INTERNATIONAL ORIENTATION		
Educational programmes in foreign language (BA; MA)	●	
International orientation of programmes (BA; MA)		●
Opportunities to study abroad (student survey)		●
Student mobility (incoming, outgoing)	●	
Percentage of international academic staff	●	
Percentage of PhDs by foreign students	●	●
International joint research publications *	●	●
International research income	●	●

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Indicators at institutional and field levels

multirank — Universities compared. Your way.

	Institutional ranking	Field-based rankings
REGIONAL ENGAGEMENT		
Percentage of graduates (Ba; MA) working in the region	●	
Student internships in the region	●	
Degree theses in cooperation with local industry		
Regional joint research publications *	●	●
Income from regional sources	●	●

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The degree to which we have managed to collect data for each of the institution-level indicators is shown below. Not all institutions have been able to deliver data for each indicator. However, for some institutions, particular indicators do not apply (e.g. if an institutions is not a PhD awarding institution, the indicator "international doctoral degrees awarded" is not applicable). See below for the data completeness:

Completeness of data by indicator (institutional ranking)
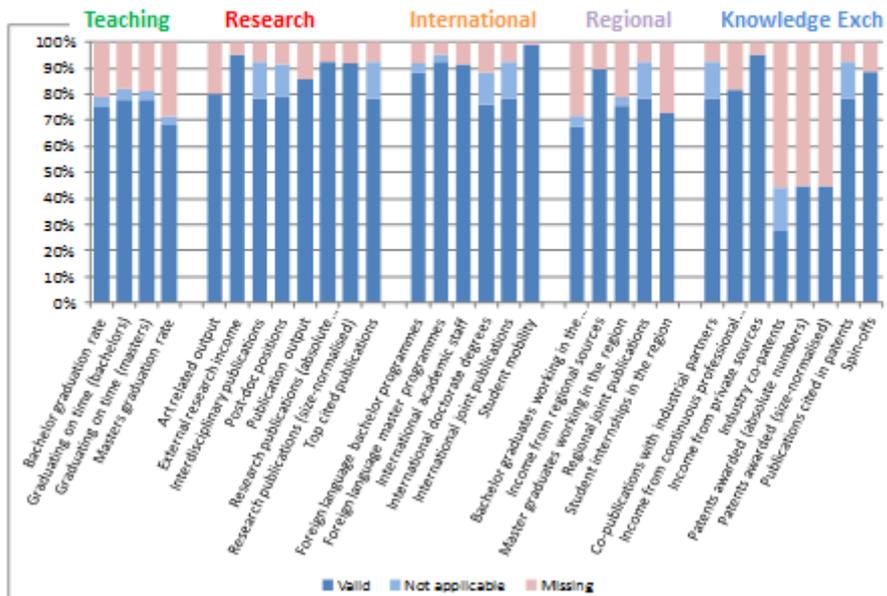
U-Multirank demonstrates for the first time the diversity of university profiles in the international context. The findings indicate that it is not possible to meaningfully identify "the world's top 100 or 200 universities overall". U-Multirank identifies the top performers – but these are different depending on the indicator. U-Multirank is a flexible tool where students, parents, academics, policy-makers, administrators, etc., can find information to support decision-making.

The second U-Multirank rankings will be released in March 2015. Institutions that would like to participate can express their interest on the U-Multirank website (www.umultirank.org).

We would like to argue that a multidimensional approach to ranking is more attractive than the currently popular approaches. It allows a large variety of institutional functions and profiles to be included, thus paying attention to the horizontal diversity of institutional missions and profiles. It opens up the possibility to compare sets of institutions with similar missions and profiles which appears to be more useful than ranking institutions that are very different and can hardly be compared.

References

CHERPA Consortium (2011). *Design and testing the feasibility of a multidimensional global university ranking*. Available from: http://ec.europa.eu/education/higher-education/doc/multirank_en.pdf

Dill, D.D. and Soo, M. (2005). Academic quality, league tables, and public policy. *Higher Education* **49**, 495-533.

European Commission (2011). *Supporting growth and jobs – an agenda for the modernisation of Europe's higher education systems*. Brussels, COM (2011) 567 final.

Vught, F.A. and Ziegele, F. (Eds.) (2012). *Multidimensional Ranking. The Design and Development of U-Multirank*. Dordrecht: Springer.