Horizontal diversity of higher education institutions. The case of Hungary – in European context[1]

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Historical and theoretical background

Differentiation, a major process of higher education systems, which has taken place in the developed world in the past 50 years, deserves particular attention. Various phenomena related to an impressive and rapid student population expansion are in the background: increasingly complex labour markets, rapid differentiation of sciences, the emergence and institutionalization of new sciences and the extensive use of interdisciplinary approaches. Furthermore, differentiation was strengthened by environmental conditions: each institution of a vast (and still expanding) sector is facing fiscal difficulties, and the struggle for resources (students, research funds) has been stretching the fields. However, adverse affects, at the same time, have enhanced homogeneity. Among others, the accreditation of higher education institutions and study programmes, as well as tendering systems pre-set identical criteria for each participant, thus encouraged similar behaviour of each participant. Similarly, European higher educational reforms (first of all the creation of the European Higher Education Area) have also generated a two-way shift. Though the harmonization of higher education systems of the participating countries enhanced homogeneity between countries, national systems themselves have become more diverse than before. In short, higher education is becoming increasingly complex and diversified, and its internal processes can only be explored if this nature of the higher education landscape is recognized. (Neave 1996) (Hrubos 2002)

To explore the above-outlined phenomenon presents a significant challenge for researchers in higher education. In the first place, preceding any systematic exploration, the most important concepts have to be defined. Diversity refers to the level of distinctness between entities within a system, whereas differentiation relates to a process in which new entities emerge within a system. Diversity denotes a static situation, a degree of variety of entities in a given moment, whereas differentiation describes the process and the dynamic of the process. Diversity in higher education can be defined from different perspectives: systemic or structural diversity refers to different types of institutions within the entire higher education system (public – private, etc.), programme diversity relates to the variety of programmes delivered by institutions, and finally we have to add reputational (prestige, status) diversity and mission diversity. Further on, when all these approaches are applied together we refer to a comprehensive diversity, the institutional diversity. To make the list complete, we have to add internal institutional diversity, indicating that differentiation could not stop at the gate of any

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institution, and additionally, their internal organizational structures have become increasingly complex too. (Hrubos 2009)

At the turn of the millennium an upsurge of internationalisation of higher education directed attention to the need to visualize diversity effectively (there were earlier attempts to set up rankings on the national level and the emergence of international rankings gave further encouragement to national ones). Obviously the emergence of global rankings initiated heated debates on methodologies and on selected indicators, but also on how results could be interpreted and applied. Naturally, such ventures inherently lead to simplifications and systemic distortion, and generate crucial conceptual debates. While rankings made a significant contribution towards improving institutional performance and quality, the succeeding ranking fetishism may have paradoxical implications. For instance, high-ranking institutions (and those aiming at the league table) are encouraged to focus on critical indicators alone (no matter how much money and effort is needed), they may even be inclined to ignore quality aspects, and those who are lagging behind are induced to stop enhancing otherwise important indicators. Although rankings are aiming to reveal differences, as the same criteria are set for every institution, rankings indisputably facilitate homogeneity. Without capturing the essence, institutions follow and imitate high-ranking institutions (monkey policy), although if their individual features were emphasized, their competitiveness could be enhanced. (Noorda 2011) At this point we may raise a general issue: What is genuinely important – to know which universities are the best of the world, or which universities do the best for the world? This question serves to highlight a problem-area: performance indicators that are considered crucial by ranking bodies do not cover all the tasks higher education institutions have to accomplish in order to be able to satisfy their mission in society. Ranking agencies, in general, prefer measurable performance indicators, on the one hand, and indicators that are at the forefront of the academic elite's interest, on the other. (Sadlak – Nian Cai 2007) (Shin et al 2011)

A distinct shift in approach is indicated by the fact, that a so-called third mission has become a widely discussed ranking issue in the past few years. Apart from their major tasks, education and research, institutions can and have to be evaluated along new areas. The research project funded by the European Commission aimed at indicating a system of dimensions and indicators to measure third mission fulfilment. At the outset, the number of indicators was more than one hundred, and over several phases, and following a series of expert consultation the number of indicators was reduced to a manageable quantity. Performance of the third mission is intended to be measured along four dimensions: social commitment, continuous learning, technology transfer and innovation. A different approach and underlying values of the endeavour are reflected in the selected dimensions. (Note: there are approaches in which innovation is used as an umbrella term for a third mission which in turn reflects ambiguities in the concept of innovation.) (European Indicators 2011)

It has become evident that higher education has to redefine its social role in order to be able to achieve acceptance in a fairly critical, occasionally hostile environment. A more enduring relationship has to be established with all the interested parties and stakeholders. Implicitly this reinforces that higher education institutions have to make their operation more transparent, their diversity more explicit, and additionally they have to address a set of increasingly complex social needs and demands. It is, however, unavoidable to leave old attitudes behind and adopt completely open and flexible attitudes that are responsive to rapid changes. In addition to invariably hierarchical rankings it's high time to initiate a horizontal, bias-free typology, or classification (mapping after ranking). The two approaches, however,

are closely linked to each other. Hence, classification allows truly relevant rankings as only institutions of the same typology are compared to each other and ranked. Institutions are evaluated by the degree to which their declared and self-imposed mission statements are fulfilled. The connection between classification and rankings will soon be accomplished. The European Commission funded project is known as multi-dimensional global university ranking. (U-Multirank 2010)

As a counter-effect, the need for more sophisticated research has been increasing against quantitative research based on gigantic databases. Preceding even rankings or classifications it has to be decided whether an institution as a whole, or its larger structural units should be considered as research units. Sophisticated qualitative analyses require smaller, genuinely homogeneous units that can be described and assessed by a variety of criteria. There are reports of such experiments. A project launched by the German Scientific Council with the aim to evaluate research activities, serves to illustrate this point. The original intention was to provide a ranking, but this plan was abandoned and a genuinely qualitative assessment model has been developed instead. Assessment is conducted along several dimensions and, within each dimension, along several criteria (indicators). Results are not aggregated into one single composite score; each research unit is evaluated individually by every criterion instead. Each institution is faced with and evaluated against its self-imposed mission statement individually. Evaluation is carried out on ordinal level alone (in six grades, from unsatisfactory to excellent). Evaluated units can be compared, but only along individual criteria. Unquestionably, the idea bears no novelty; certain elements of the model are frequently applied when research performance is evaluated. The novelty value of the project lies in the unswervingly and strictly applied philosophy, on the one hand, and the systematic implementation that covers all the related institution in any branch of sciences, on the other. (Research Performance 2008) It can be said that after ranking and mapping, the system of rating has been born.

How these issues are addressed in the European Higher Education Area

Diversity has not always been universally accepted in Europe as modern higher education systems are based upon a so-called integrated model in which each institution (originally university) has the same status, fulfils the same tasks, and their degrees have the same value. In continental Europe tight state control was designed to ensure such a situation, whereas in Great Britain traditions were meant to drive towards such conditions. In contrast, it was the diversity of American higher education, regarded as the most powerful and effective higher education system of the 20th century that was characterized by this.

Following the changes of the last decade, diversity has grown to be generally accepted as an immense value and a real advantage of European universities by reports on European higher education. The European Commission and the European University Association are unanimous in their opinion (efficiency is underlined by the former, the need to preserve academic values by the latter). If diversity was explored and better understood, we would be able to highlight its advantages more clearly to stakeholders and to the whole society. Diversity, first of all, allows students to take study programmes that best meet their interests and situation, to interpret their own social mobility, and if necessary, to adjust their higher education career to satisfy labour market needs. Obviously, it is the interest of the labour market too that a wide variety of graduates are available. A diversified system is able to satisfy the political needs of different interest groups, the lack of institutional diversity,

however, would lead to continuous disputes within the system. Effective elite and mass education can only be accomplished in a diversified system, and only then can higher education institutions operate effectively, if each of them can deal with what they are best at. Additionally, diversity provides better conditions for higher education innovations, as it is easier and less risky to test a reform in a limited range of types of institutions. To sum it up, diversified systems are more flexible, stable and more customer-oriented than homogeneous systems. Advantages, however, can only be gained if diversity is transparent. Therefore, there is a need for a classification system that could support the above-mentioned actors, and could be beneficial to governments too. Hence, the efficiency of European and national higher education policies can be enhanced, if there is no intention to deal with institutions unanimously. Finally, it is important to point out another aspect of diversity: under such conditions researchers are enabled to carry out comparative analyses on tried-and-tested, well-established methodologies. (Creativity 2009)

The U-Map model

A new project, Classifying European Institutions for Higher Education (CEIHE) was initiated by these considerations in the framework of the Centre for Higher Education Policy Studies (CHEPS), University of Twente, The Netherlands in 2004. The final report was completed in 2010. (Vught et al 2010)

The project aimed to develop a field-based classification system. A set of criteria was developed along which different groups of institutions could be identified. Classification reveals similarities and differences, thus it helps understand phenomena and improve transparency. A fundamental feature that characterizes the system is its user-friendliness; the system is suitable for the widest range of users. It is expressly non-hierarchical (not a ranking), it approach is horizontal.

The classification was refined and simplified in several stages, the number of dimensions and indicators were reduced and as a result four dimensions (Teaching and learning profile, Student profile, Research involvement, Involvement in knowledge exchange, International orientation, Regional engagement) and indicators were set in the model, now called U-Map.

The model is unable to cover all the important dimensions of higher education institutions' activities and features. Social dimensions are excluded, although they stand high on agendas in the European Higher Education Area. They were left out as sufficient data were unavailable but the intention is that as soon as it is possible social dimensions will be included: equal opportunity, access possibilities for disadvantaged groups (students coming from lower classes of the society, students with disabilities, immigrant students). Similarly, gender issues are also excluded. Although gender data are available on students and employees, more sophisticated breakdown is required to make in-depth interpretation and analyses.

Context characteristics refer to information that is essential to a future typology and its interpretation, but they are not included in the model as they represent independent variables. Such are the country in which an institution operates, the age of the institution, or its public, or private nature.

The institution is the unit of research, classification ignores internal diversity and organizational units (faculties, institutes, etc.) that enjoy relatively great independence, as a

different conceptual framework would be needed for this purpose. Data collection, cross-sectional in nature, relates to one or more years. Following the completion the system, as intended, will be repeatedly (yearly) updated, thus longitudinal analyses on cross-category movement of institutions can be carried out.

In 2011 the European University Association published a major study in which the most important currently existing international rankings and other related classification and rating systems are reviewed and critically analysed. An overview of the U-Map initiative is included as well. The report points out an essential problem the system is facing, the lack of appropriate and internationally comparable data. In its current phase U-Map relies on international data bases and on self-reported data from higher education institutions. Consequently, a great many problems arise because member states differ to a great extent inasmuch as how indicators are defined, data collected, interpreted and used. (A remedy to this problem could be a unified data collection system on European higher education and research. The European Union is aiming to set up such a scheme.) Currently, U-Map can primarily be used for comparing institutions within countries. (Rauhvargers 2011). The EUA Report II. presents a new project, the U-Multirank. It is a multi-dimensional user-driven approach to the international ranking of higher education institutions that integrates the already tested U-Map classification tool. **In this case the ranking always occurs between institutions, which are identical from a certain important point of view (belonging in the same type).The identification of types is conducted according to the U-map system.** (Rauhvargers 2013)

Attempt at adaptation the U-Map model in Hungary

The diversity of higher education institutions and the increasing diversification in the last 20 years are widely known and often referred to phenomena of Hungarian higher education. The nature and the importance of higher education are continually investigated along certain individual dimensions. However, a combination of dimensions has not been explored yet. In our research in 2010-2012 we aimed to combine a set of dimensions, the research is closely based upon the experience learned from the European model building and it can be regarded as a pilot research in Hungary. Pushing aside previous questions we intend to explore, on the one hand, the nature of diversity of the Hungarian higher education system from a new perspective, more extensively. We hope to come to reveal the true features of a phenomenon that has long seemed to be evident to us (although everything is somewhat different from its appearance). On the other hand, we want to draw attention to the initiatives of the European Higher Education Area and thus to remind ourselves that we can never forget about the European context in dealing with Hungarian higher education.

U-Map model was the starting point, when research dimensions and indicators were operationalized, but national factors were also considered. Indicators were only applied if comprehensive institutional data were available from official sources, or verifiable result from surveys**.** (Dimensions and indicators are listed in the Appendix)

Although indicators of social dimensions are excluded from our research too, a breakdown by gender was recorded in the database as those data were easily accessible. As contextual indicators, the type of founders (state, church, private) and the type of status (university, college) were also recorded. We have encountered difficulties in defining the year of

foundation, thus we have to come up with a flexible but, regarding the model, concurrently relevant solution.

As in our project only 69 institutions (all Hungarian higher education institutions) were involved in the project, we could add further contextual characteristics that require a qualitative approach (what cannot be undertaken by U-Map). In an attempt to overcome data shortages we conducted an analysis on institutional websites and in this way we sought to explore the nature of mission statements and to fill the gaps in the model. Obviously, a comprehensive picture of institutions cannot be depicted. Information will be used according to its nature.

We have taken the academic year 2009/2010 as a basis (calendar year 2009) but the framework allows longitudinal data collection in a later period. Our research related to institutions, the aim was to define major types of institutions. But since internal differentiation is an important phenomenon, where institutions have organizational units with similar legal rights as faculties, data on faculties were recorded too. Our research targeted a total of about 170 units. Yet, we were not able to conduct the research on all indicators. As a result faculty-level analyses are limited. And in view of the wide variety of organizational structures national higher education institutions are based on, faculty-related questions are regarded as necessarily simplified and occasionally irrelevant. Similarly to European higher education institutions in general, additionally to faculty-type units, other units are gaining importance (centres, institutes, etc.) The objective of our experiment is to substantiate future investigations on internal diversity.

Selected features of the institutional system of higher education in Hungary

A brief outline of a higher education system usually classifies institutions by status and by founder. The main purpose of our pilot mapping was to break away from this simplified classification and to reveal a genuine grouping of institutions while ignoring the two criteria above. Nevertheless, we have to regard them as initial information. (Table 1. 2.)

Table 1

Distribution of higher education institutions by status, founder and size of institution (2009/2010)

Status of the institutions		Size of institutions (students number)					Total
Founder		Less than 1 thousand	1-5 thousand	5-10 thousand	10-20 thousand	More than thousand	
University	State	4	2	0	8	5	19
	Private	2	0	0	0	0	2
	Church	3	1	1	0	0	5
Total		9	3	1	8	5	26
College[2]	State	1	5	2	2	0	10
	Private	5	7	1	0	0	13

[2] **In Hungarian higher education Colleges play a similar role as Fachhochschule in Germany, or HBO in the Netherlands.**

	Church	19	1	0	0	0	20
Total		25	13	3	2	0	43
Combined	State	5	7	2	10	5	29
	Private	7	7	1	0	0	15
	Church	22	2	1	0	0	25
Grand total		34	16	4	10	5	69

Source: Database of the Ministry of National Resources, calculated data

Table 2

Distribution of students by founder and status of institution (%) (2009/2010)

Founder / Status of the institutions	State	Private	Church	Total
University	94,7	0,2	5,1	100,0 N=271630
College	64,6	27,7	7,7	100,0 N=98701
Total	86,7	7,5	5,8	100,0 N=370331

Founder / Status of the institutions	State	Private	Church	Total
University	80,1	2,0	64,5	73,3
College	19,9	98,0	35,5	26,7
Total	100,0 N=320919	100,0 N=27878	100,0 N=21534	100,0 N=370331

Source: Database of the Ministry of National Resources, calculated data

Hungarian higher education system appears to be fairly complex.[3] In terms of the number of students, 34 out of the 69 higher education institutions are very small (below 1000 students). They are mainly church institutions and mainly colleges. Similarly, private institutions are small too. On the other hand, institutions with a student population of more than 10 thousand are exclusively state-funded institutions. Characteristically, universities are larger than colleges. This leads to a typical composition of students.

[3] **The institution network of higher education changed to a significant degree after the democratic transformation in 1989-1990. The new Higher Education Act made the foundation of private institutions possible, therefore this institution type appeared. Canonical institutions – which previously weren't considered parts of the higher education system – entered the realm of official higher education. There number kept growing, since beside the major churches, minor churches and monastic orders also established higher education institutions.**

The vast majority of students (86.7%) study at public institutions, and nearly 3/4 of them at universities. As a result, government and stakeholders focus their attention primarily on these sectors, and mainly these sectors are considered when a regulatory system is developed, whereas non-public institutions do satisfy a variety of mainly special social needs, and the college sector performs a vital role in relation to the labour market. The issue of distinguishing university status from college status has been much debated among higher education policy makers (especially in relation to the introduction of the multi-cycle education system, the Bologna reform); and the large number of Hungarian higher education institutions has been even more fiercely criticized. The current number of institutions is, however, the result of adverse processes. On the one hand, the number of institutions has been decreased as a result of large-scale institutional mergers in the public sector in the late 1990s. On the other hand, following the social and political transition in 1990, private and church higher education institutions were allowed to be founded, thus started to emerge (e.g. small churches as well as re-established monastic orders started to establish their higher education institutions).

The mapping procedure we have conducted aims to reveal how institutions are grouped across their fulfilled functions and this in turn might lead to a clearer understanding of the controversy above.

Identifying the main groups of institutions by cluster analysis

From the point of view of our research objectives we considered cluster analysis to be the appropriate method of analysis. After several experiments we selected the eight-cluster solution, which identified the following clusters (in the order, which was formed in the process of statistical analysis: it doesn't suggest any kind of prestige ranking).

Cluster 1: church colleges providing theological education with low student populations

This is the largest cluster by number, it includes 16 institutions. Considering their profiles they are active in homogeneous, characteristically religious, faith based fields. Beside the high number of institutions, these institutions are the smallest, the entire group's share of the total student population is 1%, and the proportion of programmes provided is somewhat higher than their proportion of the student population (1.6%)

Cluster 2: Private colleges with relatively lower student populations, which provide dominantly business administration, economics and social-sciences training
It includes 7 institutions – they are connected by the fact, that they are all private institutions and operate with low student populations. There are some among them, which are based in Budapest and some which are not. They comprise 3.8% of the total student population and 3% of programmes; very small institutions (2-300 students) are among them, as well as some educating several thousand students.

Cluster 3: colleges with higher student populations providing a broader range educational profile

It includes 10 institutions, with dominantly business administration and economics in their educational profiles, beside which the technical field is represented, along with other fields (teachers training). Some institutions with grand histories and younger ones as well – there are

state operated and private institutions, in and outside of Budapest alike. Nearly one fifth of all students attend these institutions, thus they are larger, their comparative strength and specialization indicates, the proportion of programmes provided is lower than this, only 14.8%.

Cluster 4: specialized colleges with narrower educational profiles

It includes 11 institutions, 10 colleges and 1 university (with a specialized professional orientation), which are a mix of state, private and church maintained institutions. Their educational profiles are fairly narrow, and divergent by institution (social workers, teachers training, business administration, economics, public-administration) and it's important, that there is secular education even in church institutions. Based on their student populations they are relatively small institutions and they offer a higher programme supply then their population ratio (2.8 – 3.0%)

Cluster 5: universities with broad profiles, but filed compositions differing from the classic

It includes 11 universities and colleges, which are state and church maintained, based in Budapest as well as elsewhere. Several institutions were created by the merging of various higher education institutions. They operate significant Master and PhD programmes, the intensity of their research activities however are rather dissimilar to the classic universities. This cluster includes the largest portion of students (39.6%), the ratio is somewhat lower in the respect of the programmes (34.5%).

Cluster 6: relatively small universities with special profiles

It includes 7 universities, which offer very special programme supplies, and high quality training. There are both state and church maintained institutions among them. Regarding their profiles they are similar to those in cluster 4, but these institutions are unique in their respective training and scientific fields (arts, religious study). They represent 0.9% of the student population and 5.5% of programmes.

Cluster 7: classic universities

This cluster includes 4 state universities: they have large student populations (31.9%), their programme supplies are rather broad (36.9%) and they provide wide-ranging training, furthermore they belong in this group because of their intense research activities.

Cluster 8: international universities

It includes 2 private universities, which differ from each other in many respect, still they have been classified into the same cluster because they are quite different from other higher education institutions. Their training profiles are special, focusing on narrow fields, and they don't provide training programmes on every level. International orientation is significant in both their resources and training. They educate 0.1% of the total student population and the ratio of covered programmes is 0.7%.

Subsequently to this we analysed the institutional clusters in detail based on specific dimensions and indicators, and we attempted to display the individual clusters and higher-education institutions with graphical illustrations as well. (Hrubos 2012)

Some conclusions

The cluster analysis based on the philosophy and methodology of mapping expressively illustrates the diversity of Hungarian higher education system and the new situation generated by the processes, which have taken place in the past two decades – the expansion of student population and the changes, which have occurred in the social, legal and economic environment of higher education – simultaneously with the stability of structures, which were established through a longer time.

The university-college fault-line emerges in this approach as well, since the legal distinction obviously differentiates their range of activities (primarily in the consideration of degrees offered). At the same time universities and colleges are both significantly different from each other. Three groups of institutions are unambiguously separated: small church colleges, classic large state universities and international universities. In the case of the rest of the groups diversification inside groups is significant, in many instances with explicit individuality. At the same time institutions, which belong in two, or all three types of maintainers may operate with similar activities. The continuous competition for resources occurs primary in this circle and can be understood in this context. Differentiation according to size is important as well, but it's over-simplifying by itself, since in the multi-dimensional classification the programme supply, programme profile, dominant educational field, or fields have a significant differentiating effect, thus in several instances institutions of different sizes were classified in the same group.

Specific disciplines have characteristically divergent traditions and associated values, which is apparent in a number of respects from the social composition of the student population and faculty through the organizational culture to the governance system. (Clark, 1996) (Bourdieu, 1988) The exploration of this correlation system requires real "deep drilling". As a first step it would be worth examining the institutions' internal diversity, great variety on the level of programmes and other large units with the mapping method. We have already made an attempt at this in the case of the University of Debrecen (Bander and Horváth 2012)

The continuous discussions about the number of institutions – which are beside the point, thus unproductive – could be prevented, if the institutions with small student populations, which pursue a single and very special educational field (arts, theology) were given the titles "academy" or "institute" (some have such titles even today) and if they were classified as a third category beside universities and colleges in statistics (according to the practice of a number of European countries). Thus, the total number of universities and colleges would be significantly lower (even though the number of higher-education institutions would remain the same), which would reflect the actual situation more closely and would make interpretation easier. This wouldn't affect the fact, that if the proper conditions exist these institutions could develop training programmes leading to degrees (just the same as they currently do). **It belongs in this range of issues, that the debate related to strategic questions of the transformation of higher education is currently in the process in Hungary. One of the elements of this debate is the rationalization and development of the network of institutions. In a diversified range of institutions the identification of**

institution types and the specific institutions within them is crucial (which is a decisive factor from the point of view of the financing system, and the development of the accreditation system of training programs). Various government and expert proposals have been made already, and it appears, that these took into consideration the results achieved by our U-map implementation.
After the first Hungarian publication of our research, we can already encounter a specific utilization of our results. In the course of the data collection and processing of EUROSTUDENT in Hungary, in 2013, during data weighting for producing representative result, our clusters are used as the weighting variable of the types of higher education institutions.

The analysis sheds light on those limitations, which arise from the facts, that in some dimensions, primarily in the Knowledge-transfer and Regional commitment dimension adequate information is not available about revenues, expenses and the composition thereof, and that there is no official, comprehensive data about institutions. Even though it's possible, that a part of higher-education institutions could blossom, fulfil an important social-economic role in precisely these areas, and their further and finer groups could be identified, if there were reliable and valid data available. Interconnected with this is the conclusion of the analysis, that it's worth examining such characteristics as well, which only slightly differentiate institutions, however simultaneously they significantly alter the displayed image. All of this calls attention to the need for expanding the system of data collection pertinent to higher education, and for adjusting it to the new social, policy related and scientific research requirements.

And lastly, a more generalized conclusion. The pilot study in Hungary demonstrated, that the U-map method can be successfully applied for the analysis, better understanding of the system of higher education institutions of a country, since it illustrates the activities of institutions, their similarities and differences in a multi-dimensional aspect. It would be worth performing this analysis with annual regularity, which would make longitudinal examination, the dynamic tracking of changes possible.

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Appendix

Dimensions and indicators in the Hungarian model

Dimensions	Indicators
A. Teaching and learning profile	A/1. Highest level of degree program offered A/2. Number of qualifications granted in each type of degree program A/3. Number of subject areas covered by institutions using the UNESCO/ISCED areas A/4. Number of teaching programs/branches of study A/5. Income from the teaching activity as % of total income of the institution A/6. Student/teaching staff (fte) ratio
B. Student profile	B/1. Number of mature students as a % of total number of students B/2. Number of part-time students as a % of total number of students B/3. Number of distance learning students as a % of total number of students B/4. Composition of students by the level and the subject area of the program (%) B/5. Size of the students enrolled (headcount)
C. Research	C/1. Number of publications C/2. Number of publications per fte academic staff C/3. Number of PhD degrees awarded in the academic year C/4. Number of PhD degrees awarded in the academic year per fte academic staff C/5. Income from the research activity as % of total income of the institution C/6. Expenditure on research per fte academic staff C/7. Number of academic staff with PhD, or higher research degree as % of total number of academic staff
D. Knowledge transfer	D/1. Number of active RDI projects per fte academic staff
E. International orientation	E/1. Number of foreign degree seeking students as % of total enrolment E/2. Number of incoming students in international exchange programmes as % of total enrolment E/3. Number of students sent out in international exchange programmes as % of total enrolment E/4. Number of academic staff members staying abroad as % of total academic staff E/5. Number of international academic staff members as % of total academic staff E/6. Income from international sources as % of total R+D income of the institution
F. Regional engagement	F/1. Number of graduates remaining in the region as % of total number of graduates F/2. Number of first year students from the region as % of total number of first year students
