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A Strategic Approach for Intellectual Capital Management in European Universities. Guidelines for Implementation

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[http://aer.forhe.ro/sites/default/files/
blueprint_ic_management_in_universities.pdf](http://aer.forhe.ro/sites/default/files/blueprint_ic_management_in_universities.pdf)

Final report

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9 Annex: A set of IC Indicators

The following list of IC indicators is based on synthesising existing IC reports from various universities in different countries and suggestions from the literature (e.g. Leitner 2004, OEU 2006, van Vught and Ziegele 2011).

Indicator	Type*	Definition
Human capital		
Number of academic staff	I	Academic staff directly involved in teaching and research in full time equivalents.
Academic staff with PhDs (%)	I	Percentage of all academic staff that has a phd (in full time equivalents).
Academic staff in non-formal training (no. of days)	I	Number of days academic staff spent in training, conferences or seminars during calendar year.
Female academic staff (%)	I	Percentage of women of academic staff (in full time equivalents)
Females in grade A academic positions (%)	I	Percentage of women in highest grade/post at which research is conducted (in most countries this refers to full-professor). This indicator is internationally comparable. See “She figures” report: http://ec.europa.eu/research/science-society/index.cfm?fuseaction=public.topic&id=1503
Student to academic staff ratios	I	Number of academic staff (in full time equivalents) divided by the number of students (in full time equivalents).
New research staff	I	Number of new academic staff hired during calendar year (in full time equivalents).
Academic staff separation rate	I	Academic staff that terminated contract with University as percentage of all academic staff (headcount).
Structural capital		
Capital investment (% of operating revenues)	I	Expenditure on capital investments (including buildings, research equipment, etc.) as percentage of total operating revenues during calendar/fiscal year.
Number of courses/modules	I	Number of courses / modules taught during a calendar year.
Number of new courses/modules	I	Number of new courses / modules introduced during calendar year.
Capital investment in major research equipment	I	Sum of expenditures on research equipment (excluding buildings) worth more than 100 000 euro (in thousands of euro).
Number of research programmes	I	Number of research programmes that were carried out during a calendar year.
Relational capital		
Foreign students	I	Foreign students as percentage of total students. Foreign

(%).		students are non-citizens of reporting country.
Academic staff with degrees obtained in other institution (alternative: obtained abroad) (%)	I	Percentage of academic staff that has obtained phd. in another institution (alternative: percentage of academic staff that has obtained phd. in another country).
Value (mln. eur.) research contracts (% of contracts with new clients; % of contracts with clients from abroad; % of contracts with business enterprise clients).	I	Value of research contracts (mln. eur.) signed during calendar year. Percentage of contracts signed during calendar year with new clients; Percentage of contracts signed during calendar year with clients residing in foreign country; Contracts signed with business enterprises as percentage of all contracts signed during calendar year.
Process capital: education		
Programs offered in a foreign language (%)	P	Study programs offered in a foreign language as a percentage of the total number of programs offered
Students satisfied with contacts with teachers/ professors (%)	P	Percentage of surveyed students who agree or fully agree that With the following statements: <ul style="list-style-type: none"> • I am in close contact with teachers/ professors (e.g., during office hours, via e-mail); • Good advice by teachers is available when I need it; • I receive sufficient feedback on my work (e.g., on homework, presentations, exams); The questions are from U-Multirank questionnaire. For more information please see: http://ec.europa.eu/education/higher-education/doc/multirank_en.pdf
Students satisfied with classrooms, laboratories and libraries (%)	P	Percentage of students, who claim that the following infrastructures are accessible and are of high quality: classrooms/ lecture halls; laboratories; Libraries. The questions are from U-Multirank questionnaire. For more information please see: http://ec.europa.eu/education/higher-education/doc/multirank_en.pdf
Students satisfied the course structure (%)	P	Percentage of students who agree or fully agree that: <ul style="list-style-type: none"> • There is a wide range of courses offering a view on different theories, methods and topics; • The courses / modules follow a coherent integrated whole. • Teaching stimulates a deeper reflection of my field of study • Teaching staff are qualified and are good at explaining things • Teaching refers to international developments in

		<p>my field (literature, research).</p> <ul style="list-style-type: none"> • Courses offer useful links to other fields / disciplines. • Learning materials made available on my course have enhanced my learning
Average number of library visits per student	P	Average of the number of library visits divided by number of students during calendar year.
Occupancy of lecture and seminar halls.	P	Average number of hours lecture and seminar halls were occupied per working day during the calendar year.
Students in joint degree programmes (%)	P	Students in joint degree programmes as percentage of all students
Internationally mobile students (%)	P	Percentage of students that have participated in international mobility programmes (Erasmus and others) during calendar year.
Students satisfied with international mobility experience (%).	P	<p>Percentage of students who agree or fully agree that (by institution, field of studies and level of education):</p> <ul style="list-style-type: none"> • The foreign partner institutions of my university are attractive • There are enough places available for a stay abroad; • I received sufficient support and advice to study abroad • There is sufficient financial support for studying abroad • The recognition of the results obtained (credits) abroad in my home university was easy; • The study abroad was relevant for my studies at the university. <p>The questions are from U-Multirank questionnaire. For more information please see: http://ec.europa.eu/education/higher-education/doc/multirank_en.pdf</p>
Process capital: research		
Occupancy of laboratories. (alternative: waiting times)	P	Average number of hours laboratories were occupied per working day during the calendar year/ alternative: average number of waiting days to use laboratory.
Mobile academic staff (%).	P	Percentage of academic staff that for longer than 5 days were visiting researchers, fellows or invited readers in other academic or business institutions (excluding conferences, seminars, etc.).
Process capital: third Mission		
University – business collaborative research projects	P	Number of collaborative research projects with private sector organisations started during calendar year.
Outputs and Impacts: education		
Completion rate (Graduates as % of	O&Im	Graduates as percentage of all accepted students

all accepted students)		
Average time to graduation for PhD students	O&Im	Averages of the number of years from entry to completion of phd studies.
Degree of teaching specialisation	Im	The degree of specialization is a structural indicator that ranges from 0 top 100. A value below 1 indicates low specialisation, a value equal to 1 indicates a national/regional average and values above 1 indicate high specialisation in a given HE field. It is calculated as the ratio of the share of University graduates in a given education field and share of graduates in that field in a country/region. More specifically: Teaching specialisation = $(Gx / Gt) / (Cx / Ct)$, where Gx – number of graduates in a given field of that university; Pt-total number of graduates of university; Ct – Graduates in that field in the country; Ct – total number of graduates in a country. The same formula applies when estimating specialisation of university in a region.
Unemployment of graduates	Im	Percentage of graduates unemployed 18 months after graduation (source: survey of graduates).
Outputs and Impacts: research		
Number of peer reviewed publications per academic staff	O	Number of articles published in peer reviewed scientific journals included in ISI Web of Knowledge divided by number of academic staff (full time equivalents)
Degree of research specialisation	Im	The degree of specialization is a structural indicator that ranges from 0 top 100. A value below 1 indicates low specialisation, a value equal to 1 indicates a world average and values above 1 indicate high specialisation in a given research field. It is calculated as the ratio of the share of publications by University in a given field and share of publications in a given field in the world. More specifically: Research specialisation = $(Px / Pt) / (Wx / Wt)$, where Px – number of publications in a given field published by university; Pt-total number of publications published by university; Wt – number of publications in a given field published in the world; Wt – total number of publications published in the world. The same formula applies when estimating specialisation of university in a country or a region.
Scientific publications among the top 10% most cited publications worldwide (%)	Im	Percentage of publications among the top 10% most cited publications worldwide.
Average number of citations per publication (past 5 years)	Im	Average of the sum of citations of peer reviewed publications published within 5 past years divided by the number of peer reviewed publications published within 5 past years.
International	O	Number of international scientific co-publications per

scientific co-publications per researcher.		researcher. “International scientific co-publications” are defined as research-related papers (document types: ‘research articles’, ‘research reviews’, notes’ and ‘letters’) published in the Web of Science database and co-authored by at least one author affiliated to an institution located in a different country.
Number and value of nationally funded research projects	O	Number of research projects funded on competitive basis by national research funding body that started (contract signed) during calendar year/ value (mln. eur.) of research projects funded on competitive basis by national research funding body that started (contract signed) during calendar year.
Number and value of internationally funded research projects	O	Number of research projects funded on competitive basis by international (e.g. European Research Council, etc.) research funding bodies that started (contract signed) during calendar year/ value (mln. euro) of research projects funded on competitive basis by international research funding bodies that started (contract signed) during calendar year.
Conference papers per academic staff	O	Number of papers presented at international scientific conferences divided by the number of academic staff (full time equivalents).
Outputs and Impacts: third mission		
Income (euro) from open-access research infrastructures	Im	Income (in thousands of eur.) generated from granting access to open access infrastructures.
Patents granted	O	Number of patents granted by the US Patent and Trademark office, European patent office or corresponding national authority.
License and patent revenues (mln. euro)	Im	Sum of income in royalties and license fees during a calendar year (mln. eur.)
Number of public-private co-publications	O	Sum of public-private co-authored publications published during calendar year. The “public private co-publications” are defined as all research-related papers (document types: ‘research articles’, ‘research reviews’, notes’ and ‘letters’) published in the Web of Science database. The definition of the “private” sector excludes private medical and health sector.

Notes: I: Input; P: Process; O: Output; Im: Impact