KONINKLIJKE NEDERLANDSE
AKADEMIE VAN WETENSCHAPPEN

The inevitability of societal impact assessment in a

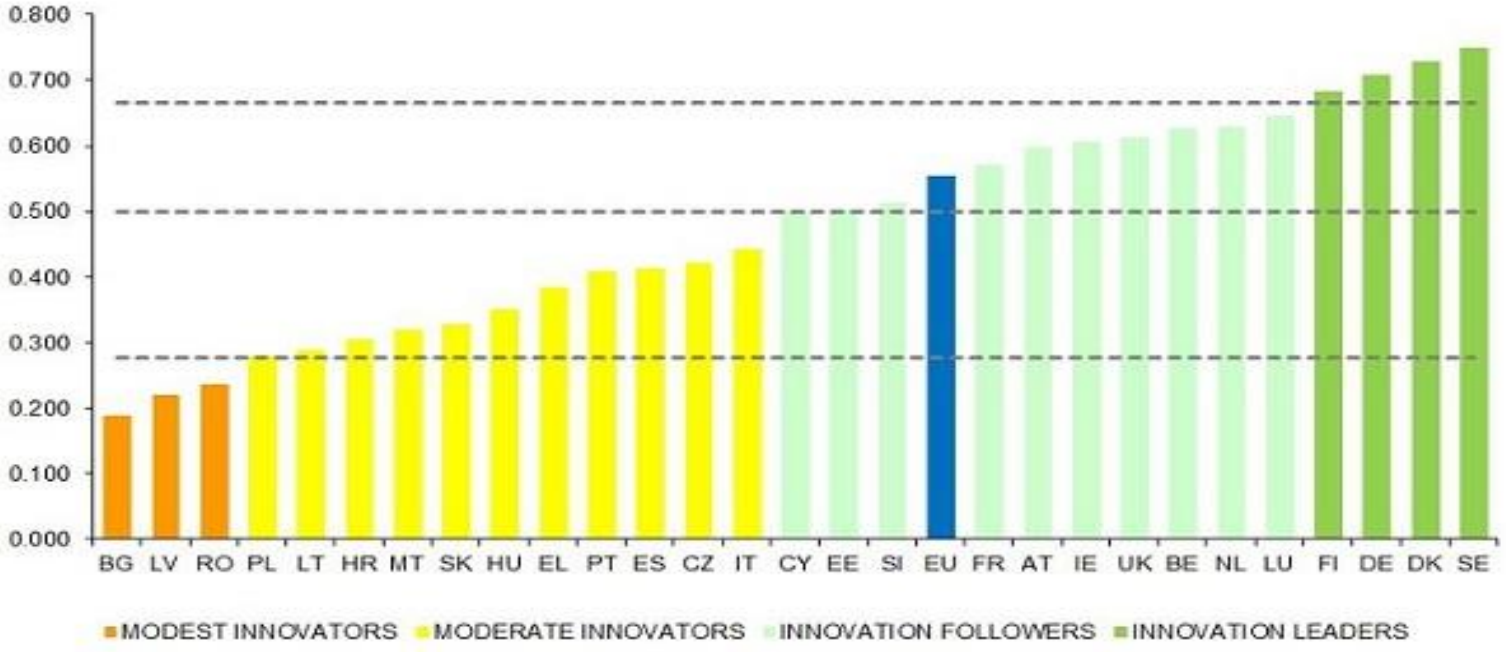
Knowledge Society

HEA Forward Look
Dublin, 15 APRIL 2015
JACK SPAAPEN

TOPICS

- What future do we want or need for Higher Education, Research & Innovation (HERI) ?
- HERI in context: “Grand challenges“ for universities: 4 scenarios [Rathenau]
- What is societal impact? And how can we evaluate it (emulation or innovation)
- The Dutch solution: comprehensiveness & ownership
- Need for a new evaluation culture: productive interactions

EU INNOVATION UNION SCOREBOARD 2014



Note: **Average performance is measured using a composite indicator building on data for 24 indicators going from a lowest possible performance of 0 to a maximum possible performance of 1.**

The Global Competitiveness Index 2014–2015 Rankings

Covering 144 economies, the Global Competitiveness Index 2014–2015 measures national competitiveness—defined as the set of institutions, policies and factors that determine the level of productivity.

Economy	Score[1]	Prev.[2]	Trend[3]
Switzerland	5.70	1	
Singapore	5.65	2	
United States	5.54	5	
Finland	5.50	3	
Germany	5.49	4	
Japan	5.47	9	
Hong Kong SAR	5.46	7	
Netherlands	5.45	8	
United Kingdom	5.41	10	
Sweden	5.41	6	
Norway	5.35	11	
United Arab Emirates	5.33	19	
Denmark	5.29	15	
Taiwan, China	5.25	12	
Canada	5.24	14	
Qatar	5.24	13	
New Zealand	5.20	18	
Belgium	5.18	17	
Luxembourg	5.17	22	
Malaysia	5.16	24	
Austria	5.16	16	
Australia	5.08	21	
France	5.08	23	
Saudi Arabia	5.06	20	
Ireland	4.98	28	
Korea, Rep.	4.96	25	
Israel	4.95	27	
China	4.89	29	
Estonia	4.71	32	
Iceland	4.71	31	
Thailand	4.66	37	
Puerto Rico	4.64	30	
Chile	4.60	34	
Indonesia	4.57	38	
Spain	4.55	35	
Portugal	4.54	51	
Czech Republic	4.53	46	
Azerbaijan	4.53	39	
Mauritius	4.52	45	
Kuwait	4.51	36	
Lithuania	4.51	48	
Latvia	4.50	52	
Poland	4.48	42	
Bahrain	4.48	43	
Turkey	4.46	44	
Oman	4.46	33	
Malta	4.45	41	
Panama	4.43	40	
Italy	4.42	49	
Kazakhstan	4.42	50	
Costa Rica	4.42	54	
Philippines	4.40	59	
Russian Federation	4.37	64	
Bulgaria	4.37	57	
Barbados	4.36	47	
South Africa	4.35	53	
Brazil	4.34	56	
Cyprus	4.31	58	
Romania	4.30	76	
Hungary	4.28	63	
Mexico	4.27	55	
Rwanda	4.27	66	
Macedonia, FYR	4.26	73	
Jordan	4.25	68	
Peru	4.24	61	
Colombia	4.23	69	
Montenegro	4.23	67	
Vietnam	4.23	70	
Georgia	4.22	72	
Slovenia	4.22	62	
India	4.21	60	
Morocco	4.21	77	
Sri Lanka	4.19	65	
Botswana	4.15	74	
Slovak Republic	4.15	78	
Ukraine	4.14	84	
Croatia	4.13	75	
Guatemala	4.10	86	
Algeria	4.08	100	
Uruguay	4.04	85	
Greece	4.04	91	
Moldova	4.03	89	
Iran, Islamic Rep.	4.03	82	
El Salvador	4.01	97	
Armenia	4.01	79	
Jamaica	3.98	94	
Tunisia	3.96	83	
Namibia	3.96	90	
Trinidad and Tobago	3.95	92	
Kenya	3.93	96	
Tajikistan	3.93	n/a	
Seychelles	3.91	80	
Lao PDR	3.91	81	
Serbia	3.90	101	
Cambodia	3.89	88	
Zambia	3.86	93	
Albania	3.84	95	
Mongolia	3.83	107	
Nicaragua	3.82	99	
Honduras	3.82	111	
Dominican Republic	3.82	105	
Nepal	3.81	117	
Bhutan	3.80	109	
Argentina	3.79	104	
Bolivia	3.77	98	
Gabon	3.74	112	
Lesotho	3.73	123	
Kyrgyz Republic	3.73	121	
Bangladesh	3.72	110	
Suriname	3.71	106	
Ghana	3.71	114	
Senegal	3.70	113	
Lebanon	3.68	103	
Cape Verde	3.68	122	
Côte d'Ivoire	3.67	126	
Cameroon	3.66	115	
Guyana	3.65	102	
Ethiopia	3.60	127	
Egypt	3.60	116	
Paraguay	3.59	119	
Tanzania	3.57	125	
Uganda	3.56	129	
Swaziland	3.55	124	
Zimbabwe	3.54	131	
Gambia, The	3.53	116	
Libya	3.48	108	
Nigeria	3.44	120	
Mali	3.43	135	
Pakistan	3.42	133	
Madagascar	3.41	132	
Venezuela	3.32	134	
Malawi	3.25	136	
Mozambique	3.24	137	
Myanmar	3.24	139	
Burkina Faso	3.21	140	
Timor-Leste	3.17	138	
Haiti	3.14	143	
Sierra Leone	3.10	144	
Burundi	3.09	146	
Angola	3.04	142	
Mauritania	3.00	141	
Yemen	2.98	145	
Chad	2.85	148	
Guinea	2.79	147	

Advanced Economies
Middle East, North Africa, and Pakistan
Emerging and Developing Asia
Latin America and the Caribbean
Commonwealth of Independent States
Emerging and Developing Europe
Sub-Saharan Africa

1 Scale ranges from 1 to 7.
2 2013–2014 rank out of 148 economies.
3 Evolution in percentile rank since 2007. Sparkline axes are economy specific.

CCI RANKINGS 2014-2015

1. Switzerland
2. Singapore
3. USA
4. Germany
5. Japan
6. Hong Kong
7. Netherlands
8. UK
9. Sweden
10. Norway

25. Ireland
26. Korea
27. Israël
28. China

CURRENT HERI POLICY IN THE NETHERLANDS

- Sharper profiles for the universities
- Topsector policy, the golden triangle: Energy, high tech, water, agriculture and food, health, creative industry, logistics, horticulture, chemicals
- Sector plans
- H2020
- National research agenda

EU POLICY

EU: Grand Societal Challenges:

•Health, demographic change and wellbeing; Food security, sustainable agriculture, marine and maritime research, and the bio-economy; Secure, clean and efficient energy; Smart, green and integrated transport; Inclusive, innovative and secure societies; Climate action, resource efficiency and raw materials

EU: Joint Programming Initiatives:

•Agriculture, food security and climate change; Cultural Heritage and global change; Healthy diet for a healthy life; Urban Europe, Future of cities and transport

•……

The societal impact of HERI

- What kind of universities (or UAS) do we want?
- What kind of research do we need?
- What kind of education do we want?
- What kind of innovation do we need?

→And how do we attune the different parts of HERI?
→ And what does this mean for the evaluation and promotion of societal impact of academic research?

THE WORLD UNIVERSITY RANKING 2014

1. California Institute of Technology
2. Harvard University
3. University of Oxford
4. Stanford University
5. University of Cambridge
6. Massachusetts Institute of Technology
7. Princeton University
8. University of California, Berkeley

=9. Imperial College London

=9. Yale University

YALE FACTS

Undergraduate students*	5,379
Graduate and professional students*	6,501
International students*	2,135
Faculty*	4,140
Staff*	9,323
International scholars*	2,327
Living alumni	168,987 (as of April 2012)
Library holdings	15 million volumes
Varsity athletic teams*	35
Total number of buildings*	440
Endowment (market value)*	$19.3 billion
Operating budget*	$2.82 billion

Rathenau scenarios of future universities

4 ***scenarios***:

- National solidarity: public value of R&E
- Regional power: economic opportunities in the region, knowledge = private commodity
- European variation: European funding, PPS
- International selection: hyper competitive global environment, rankings

2 ***cross cutting uncertainties***:

- Who "owns" the universities?
- Competition or collaboration

National solidarity

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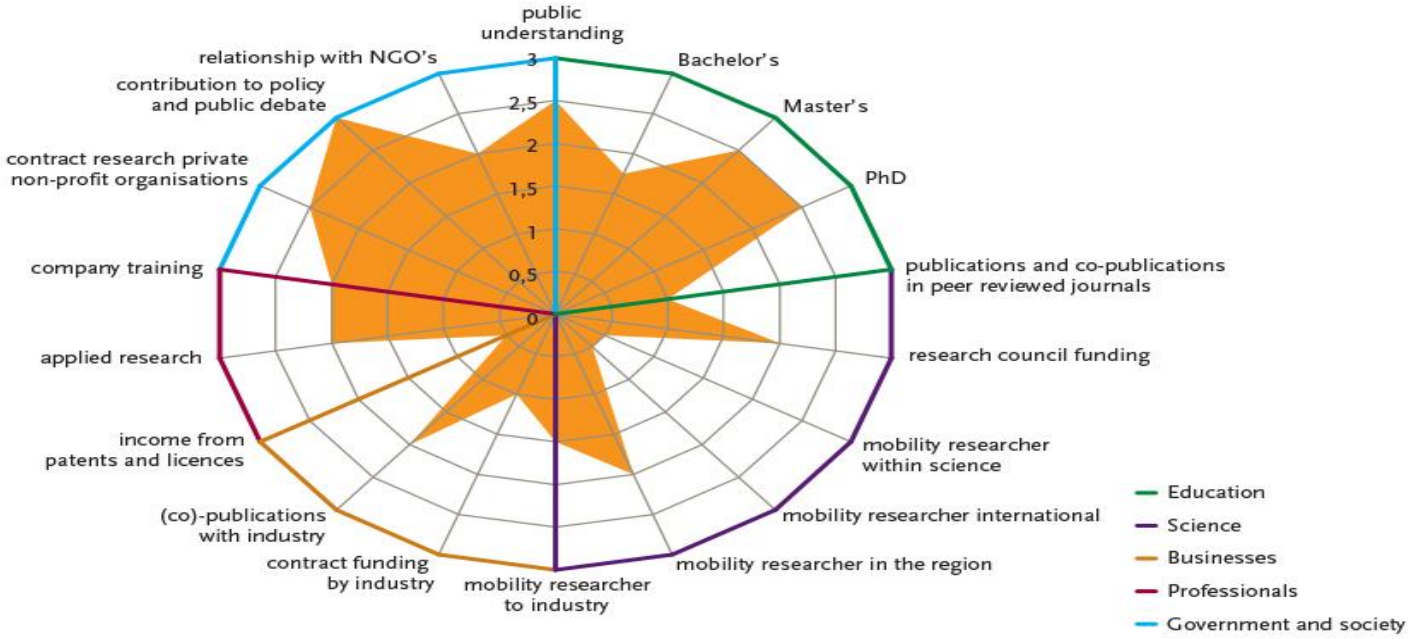
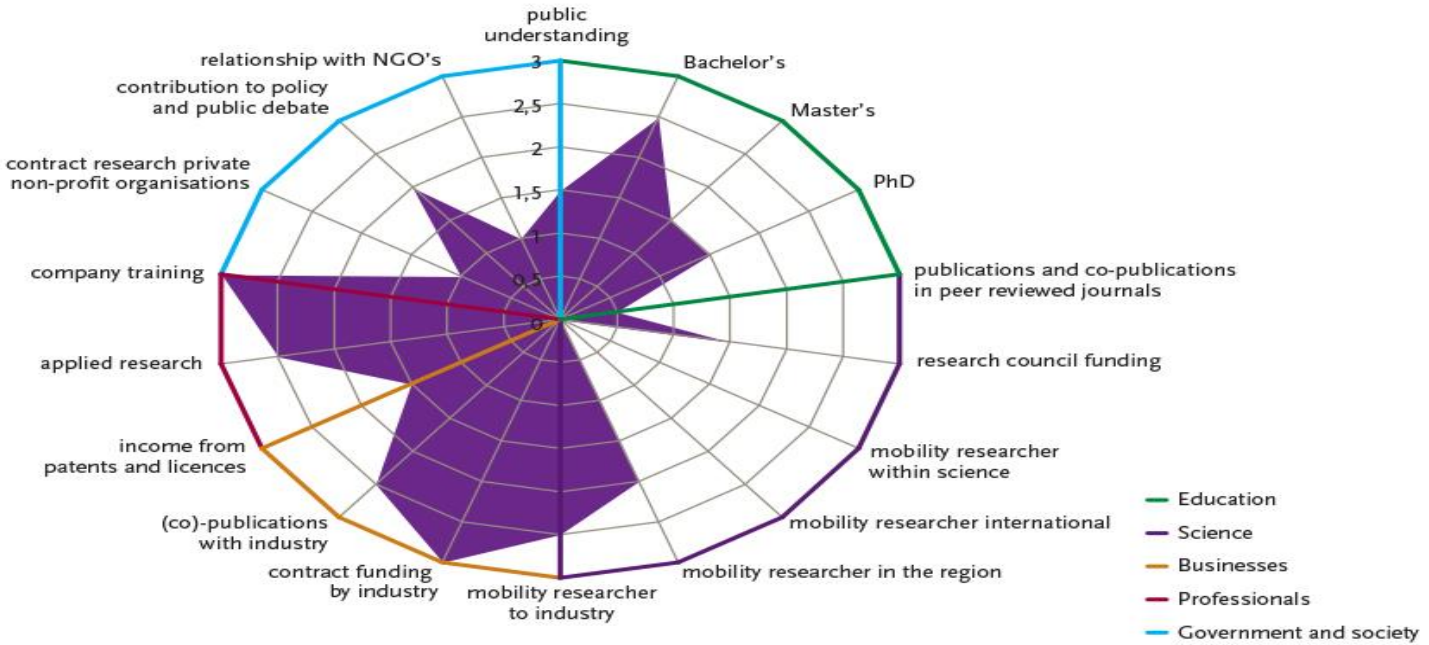
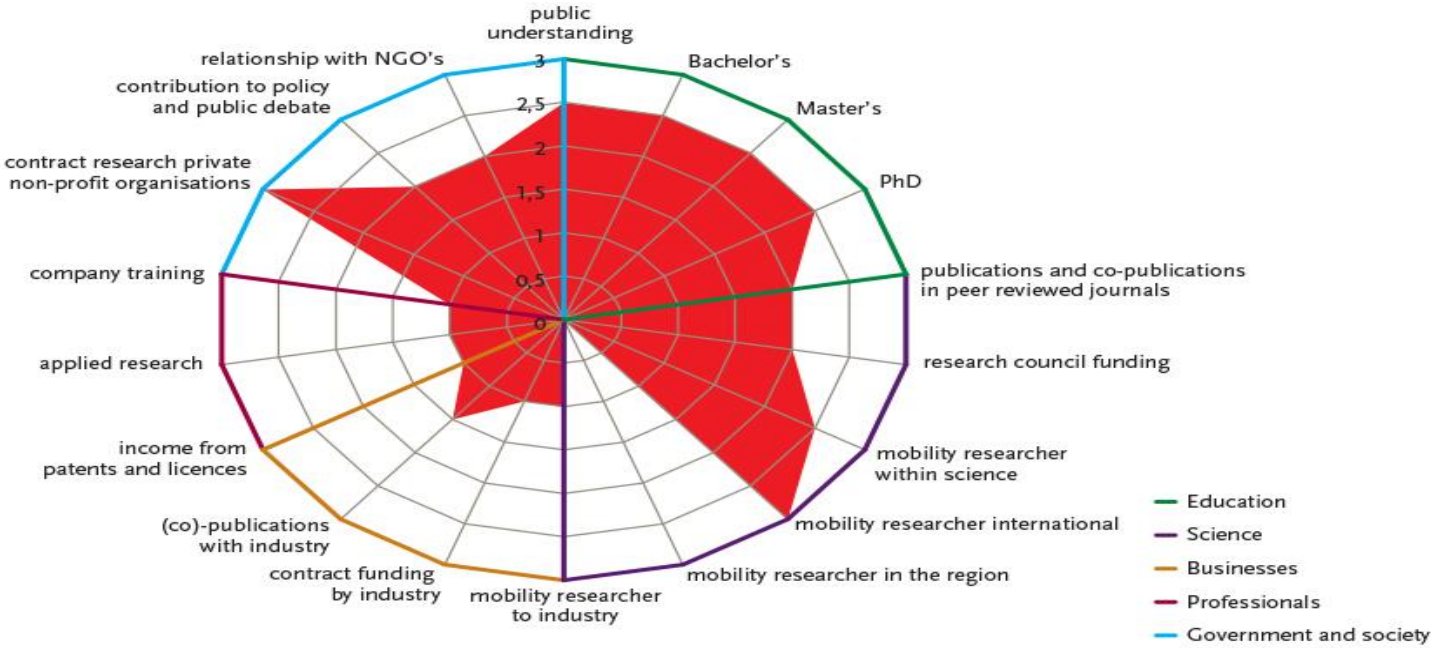


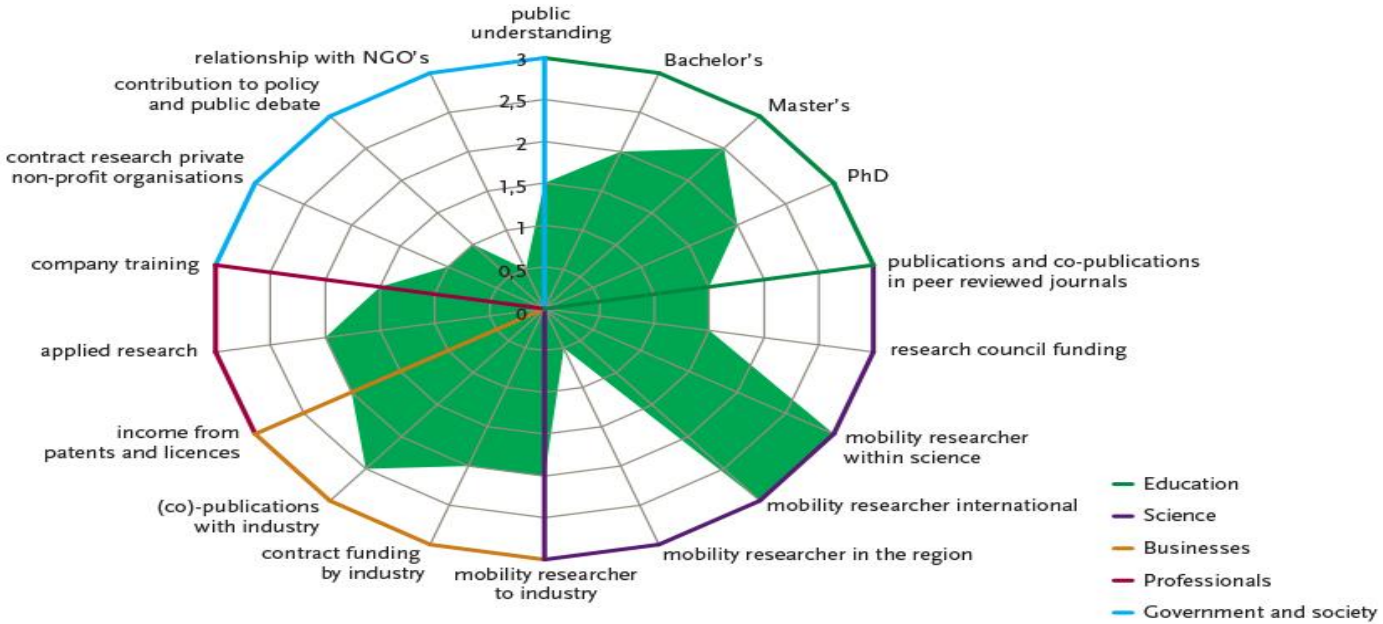
Regional power



European variation



International selection



MAJOR CHANGES IN THE CONTEXT OF HERI

- Growing external pressure
  - Society demands more relevance, impact, etc. leading to a shift from academic research to applied research / research in the context of application *(Gibbons, Nowotny a.o.)*
  - Shift to larger entities in research endeavours, mixed participants
  - Shift from national lump sum funding to contract funding (EU, industry, PPS)
- Growing internal unrest
  - SiT, science 2.0, the new university (anti establishment, anti profit)
  - Shifts in education, from pencil, books and classrooms to keyboards, and distant (online) reading and learning (MOOC's)

→ Shift from higher education policy to industry policy?

→ And now to policy for the knowledge society?

What is Societal Impact

- ‘Impact’ is the sum of many contributions by many different stakeholders in a research network
- Contributions vary from research articles to technical solutions to policy measures to end user preferences
- ‘Impact’ may refer to changes in human behavior, to organizational change, to conceptual innovation, to societal innovation
- Regards socio-economic, cultural, legal, political spheres of society
- Areas like food security, healthy aging, climate change, migration, urbanization, access to technology, opportunities for development → societal innovation

Societal impact – an elusive concept

- Sounds linear, but it is not: kaleidoscope interactions between stakeholders from industry, society, policy, NGO, public
- Sounds measurable, but it is not (easy) Uptake? Long term, short term? Intermediate impact? Products or services? Awareness? Understanding? Funding?
- Sounds positive, but it is often not [for some it is for some not]
- Researchers are ambiguous, often see it as an obligation, distraction from their real mission (basic research, individual projects)
- Expectations and needs vary between fields, urgency too

How to evaluate research impact in his context?

Should we emulate or innovate?

- Process oriented or output oriented?
- Ownership: public or private, stakeholders?
- Peer review, extended peer review, mixed review
- Quantitative or qualitative methods?
- Focus on mutual learing instead of accountability

Standard Evaluation Protocol 2015 - 2021

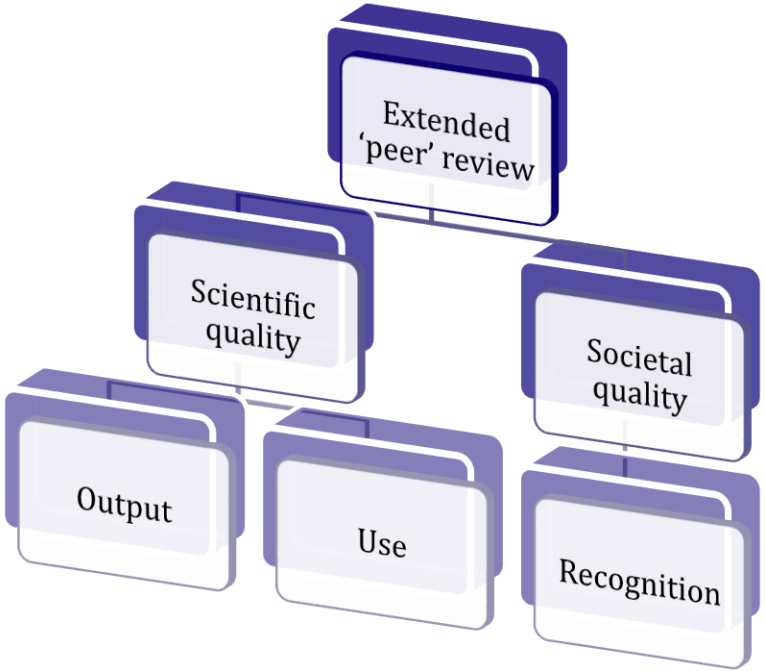
ASSESSMENT SCHEME FOR SEP RESEARCH

PEERS, OTHER EXPERTS and STAKEHOLDERS

EQUAL ATTENTION IN ASSESSMENT

INDICATORS

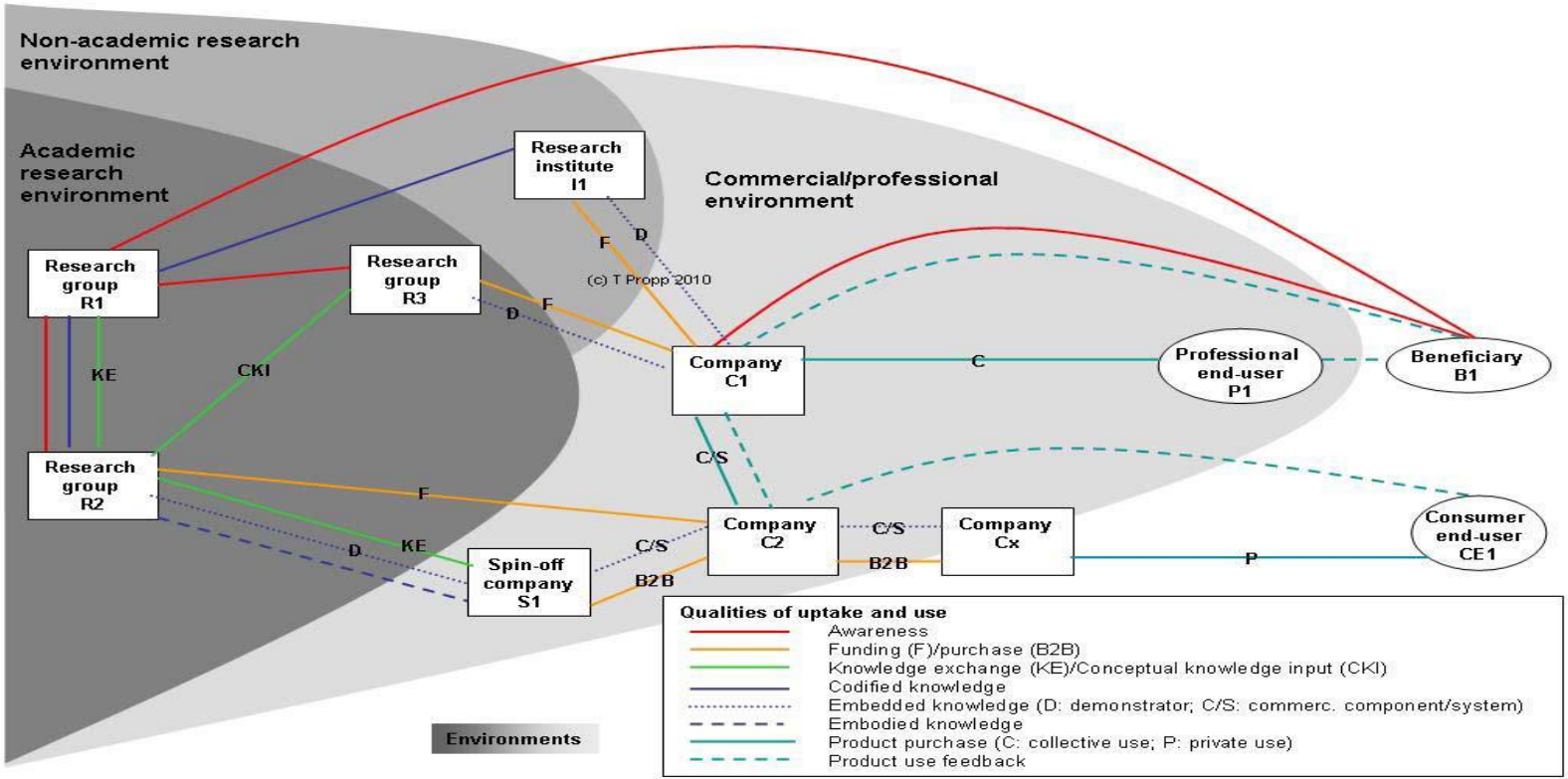
BOTTOM UP



SEP INDICATOR CATEGORIES

Assessment categories	Scientific quality	Relevance to society
Output	Sc. articles (refereed vs. non-refereed) Sc. books Other research outputs (instruments, infrastructure, datasets, softwaretools, designs) Dissertations	(policy) reports Articles in professional journals Other output (instruments, infrastructure, datasets, softwaretools, designs) Outreach-activitties, public lectures, exhibitions,
Use	Citations Use of datasets, softwaretools, etc. by peers Use of research facilities by peers Revies in scholarly journals	Patents/licences Use of research facilities by societal partners Projects with societal partners Contract research
Recognition	Scientific prizes Personal sc. subsidies Invited lectures Membership of sc. committees, editorial boards, etc.	Public prizes Valorisation funding Positions paid for by public parties Memberships of public advisory bodies

Example of Research and Innovation Network



TYPES OF INTERACTIONS IN NANO NETWORK

- Awareness
- Funding / purchase
- Knowledge exchange / professional knowledge input
- Codified knowledge
- Embedded knowledge (demonstrator, commercial component or system)
- Embodied knowledge
- Product purchase (collective use, private use)
- Product use feedback

SIAMPI: 3 DISTINCT TYPES OF PRODUCTIVE INTERACTIONS

- **Direct, personal interactions** : joint projects, advisory, consultancy, double functions, mobility
- **Indirect interactions through media** :
  - Texts : articles, books, catalogues, protocols, new diagnostics
  - Artifacts : instruments, exhibitions, models, designs
- **Material support**: contracts, subsidies, patenting, licensing, sharing of people and facilities

SIAMPI indicators for productive interactions

personal interactions between stakeholders	interaction through media	Financial / material interaction
•Professional digital networks •social media •social networks •face-to-face meetings •Video / phone conferencing •double functions, other mobility arrangements •public debate •Outreach through radio, tv, internet •etc.	•academic journals •professional journals •non academic journals •popular media •exhibitions •artefacts, models •films •master theses, graduate projects •standards, protocols •social media •etc.	•research contracts, public and private, and mixed, national, international •facility, instruments sharing • start ups •contribution “in kind” (people) •IPR arrangements, patents, licenses •Professional training •Other stakeholder interest •etc.

NEW EVALUATION CULTURE: PROCESS IN STEAD OF OUTPUT ORIENTED

- Mission oriented, various legitimate research profiles (policy oriented, industry oriented, research community)
- Context oriented: networks of relevant stakeholders
- Focus on **productive interactions** and mutual learning
- Joint decisions about indicators, quantitative and qualitative

SIAMPI: Social impact assessment methods through productive interactions (Spaapen and Van Drooge, *Research Evaluation*, 20(3), sep 2011, 211-218)

CONSEQUENCES FOR (IMPACT) ASSESSMENT