

Methodology for Evaluating Research Organisations M17+

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ÚSTAV
KONSTRUOVÁNÍ

Content of presentation

- Introduction
- State of The Art
- Methodology 17+
- Conclusions



Introduction

What exactly is the science evaluation?

The European Commission definition is:



- *“Evaluation is a process by which the **quality, implementation, target relevance and impacts** of R&D policies/programmes are investigated, interpreted and examined.”*

What was the evaluation in the Czech Republic?



- *It relies solely on the **quantification of research outputs for the evaluation of research** organisations and research programmes. It is predominantly monitoring exercise. Institutional support is allocated mechanically **using the rule of three**.*

State of The Art - Evaluation methodology in the CZ

1st Version 2004

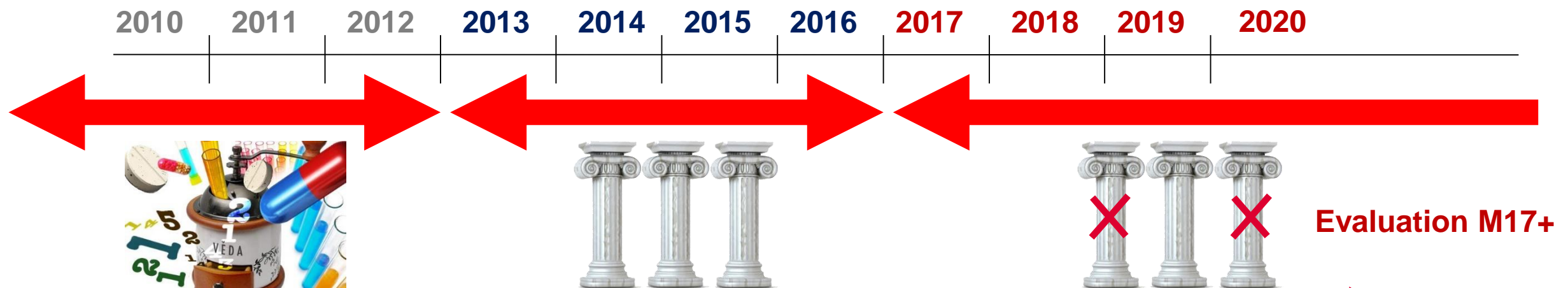
2nd Version 2006 (index SR - everything is compared to the average)

3rd Version 2009 (expanding the types of acceptable results)

4th Version 2010 (changing the definitions of results)

5th Version 2013-2016 (restrictions in eligible R&D results)

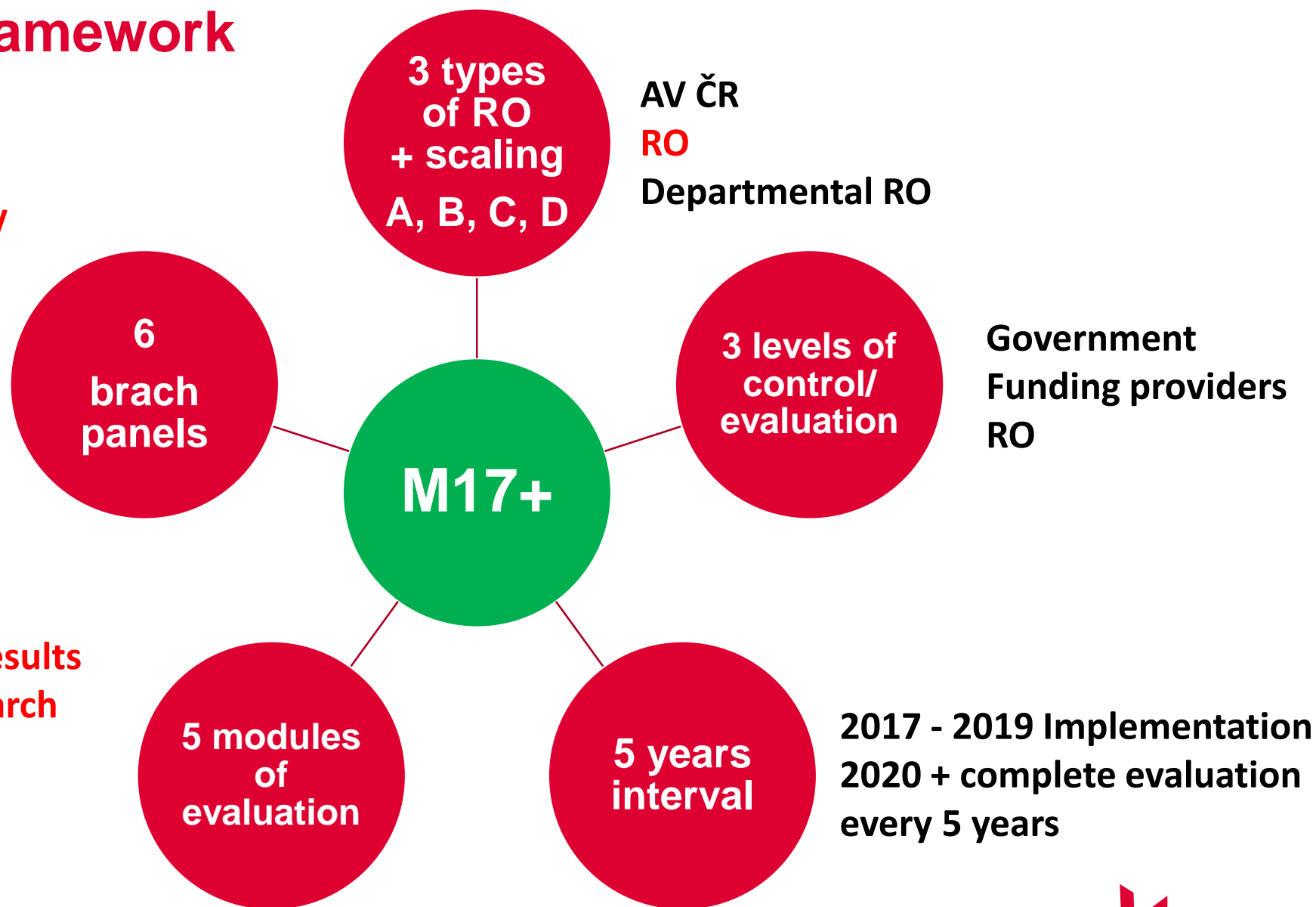
6th IPN Metodika - New concept of the Czech research evaluation M17+



M17+ Framework

Natural Sciences
Engineering&Technology
MedicalHealth&Science
Agriculture
SocialSciences
Arts&Humanities

M1 Quality of selected results
M2 Performance of research
M3 Social relevance
M4 Viability
M5 Strategy and concept



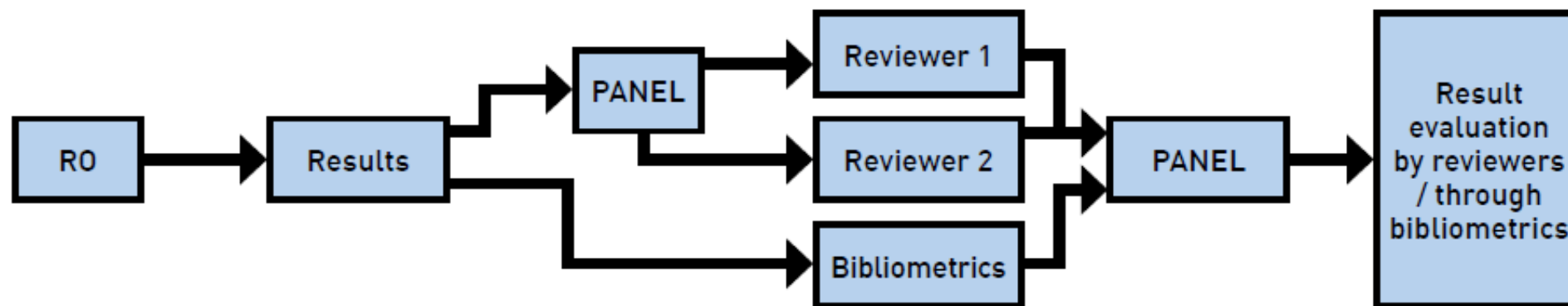
Modules of Evaluation M17+

M1 - Quality of selected results

A limited number of selected results compared with international levels.

- Contribution to the knowledge in the given areas (especially for fundamental research).
- Social impact (especially for applied research).

For the evaluation in 2019 will be applied results from 1/2014 till 12/2018.



M1 - Quality of selected results

M1 - Qualitative Scale - contribution to knowledge (especially for basic research results)

- (1) Results that are world-leading in terms of originality, significance and efforts required to obtain the results
- (2) Results that are internationally excellent but not top level...
- (3) Results that are recognised internationally...
- (4) Results that are recognised nationally...
- (5) Results that fail to meet the standard...

M1 - Qualitative Scale - social relevance (especially for applied research)

- (1) World-leading results (will bring a critical change with international economic or social impact)
- (2) Excellent results...
- (3) Very good results (will bring change with economic impact in the Czech market or social impact)
- (4) Average results...
- (5) Below-average results...

M1 – SKV POPR for expert panels and evaluators

SKV SYSTEM

Dashboard Results records

Result preview

Deadline for review: **23.11.2017**

Accept to review Reject review

Organization: Vysoké učení technické v Brně/Fakulta strojího inženýrství
Result: Kryt svařovací helmy s automaticky řízeným pneumatickým přesunem ochranného skla
Science area: 2. Engineering and Technology
Ford: 2.3 Mechanical engineering
Specialization: Mechanical engineering
Criterion: Social relevancy
Annotation: Technické řešení se týká krytu svařovací helmy s ochranným sklem, kde do korpusu svařovací helmy je vložen rám krytu, který má na dvou protilehlých stranách vytvořené podélné drážky, v kterých je uložen rámeček s ochranným sklem. Rámeček dosedá na levou patku umístěnou kolmo k jedné straně rámu s drážkou a na pravou patku umístěnou kolmo k druhé straně rámu s drážkou. Levá patka je spojená s vratnou pružinou připevněnou k rámu a pravá patka je spojená s pístní tyčí pístu propojeného s pneumatickým ventilem spojeným s elektromagnetickým ovládáním. Elektromagnetické ovládání je připojeno k fototranzistoru připevněnému k rámu krytu.
Keywords: welding, automatic pneumatic control, protective helmet
Autors: Lacko, Branislav
Result type: F
Reason: Užitečný vzor představuje zejména zvýšení bezpečnosti práce a zvýšení produktivity výroby. Při ručním svařování se v současnosti používá řada automatických svařovacích helem, které se snaží ulehčit svařčům jejich práci při zajištění potřebné ochrany. Většina z nich však využívá samostmivacích efektů (např. sada svařovacích helem VarioProtect® apod.), ve snaze uvolnit svařčům při svařování obě ruce. Dosavadní použitá řešení jsou poměrně drahá. Proto nejsou používána v malých firmách, soukromými řemeslníky a kutily. Výhoda navrženého řešení spočívá ve využívání stlačeného vzduchu buď z malých bombiček, nebo z dílenského rozvodu stlačeného vzduchu a možností současných nízkých cen automatizačních prostředků. Předložené řešení je jednoduché a levné. Lze ho realizovat také tak, aby se dalo namontovat na starší kryty pro svařeče. Zařízení je navrženo tak, aby výchozí poloha ochranného skla, vždy chránila pracovníka před intenzivním světlem svařovací oblouku i v okamžiku výpadku stlačeného vzduchu nebo elektroniky. Přitom rychlost přesunu ochranného skla do bezpečnostní polohy stlačeným vzduchem je rychlejší, než průběh stmivacích efektů. Protože svařování v současnosti představuje velmi využívaný prostředek pro spojování součástí, má předložené řešení mimořádně velký hospodářský význam.
Reference to the repository with result text: -
Supporting information: -

M1 – SKV POPR for expert panels and evaluators

Create review

Deadline for review: **02.12.2017**

Score + 1 - World-leading 2 - Excellent 3 - Very good 4 - Average 5 - Below the average

A Description of the Qualitative Scale

(1) World-leading results, the practical utilization of which will bring about a critical change with an international economic impact (real likeliness to have a broad application on multiple international markets, etc.) or a change with an extraordinary international impact on society (real likeliness to have a critical international application in spheres of public interest).

(2) Excellent results, the practical utilization of which will bring about a change with an international economic impact (real likeliness to have an application on multiple international markets, etc.) or a change with a significant impact on society (real likeliness to have a critical application in spheres of public interest).

(3) Very good results, the practical utilization of which will bring about a change with an economic impact in the Czech market or a change with an impact on society (real likeliness to have an application in spheres of public interest).

(4) Average results, the practical application of which will bring about a partial change with an economic impact in the Czech market or a partial change with an impact on Czech society (real likeliness to have a partial application in spheres of public interest).

(5) Below-average results, the practical application of which is likely to bring about no change with an economic impact or no change with an impact on Czech society (no real likeliness to have an application in spheres of public interest).

Justification for the score

(1) World-leading results, the practical utilization of which will bring about a critical change with an international economic impact (real likeliness to have a broad application on multiple international markets, etc.) or a change with an extraordinary international impact on society (real likeliness to have a critical international application in spheres of public interest).

(2) Excellent results, the practical utilization of which will bring about a change with an international economic impact (real likeliness to have an application on multiple international markets, etc.) or a change with a significant impact on society (real likeliness to have a critical application in spheres of public interest).

(3) Very good results, the practical utilization of which will bring about a change with an economic impact in the Czech market or a change with an impact on society (real likeliness to have an application in spheres of public interest).

(4) Average results, the practical application of which will bring about a partial change with an economic impact in the Czech market or a partial change with an impact on Czech society (real likeliness to have a partial application in spheres of public interest).

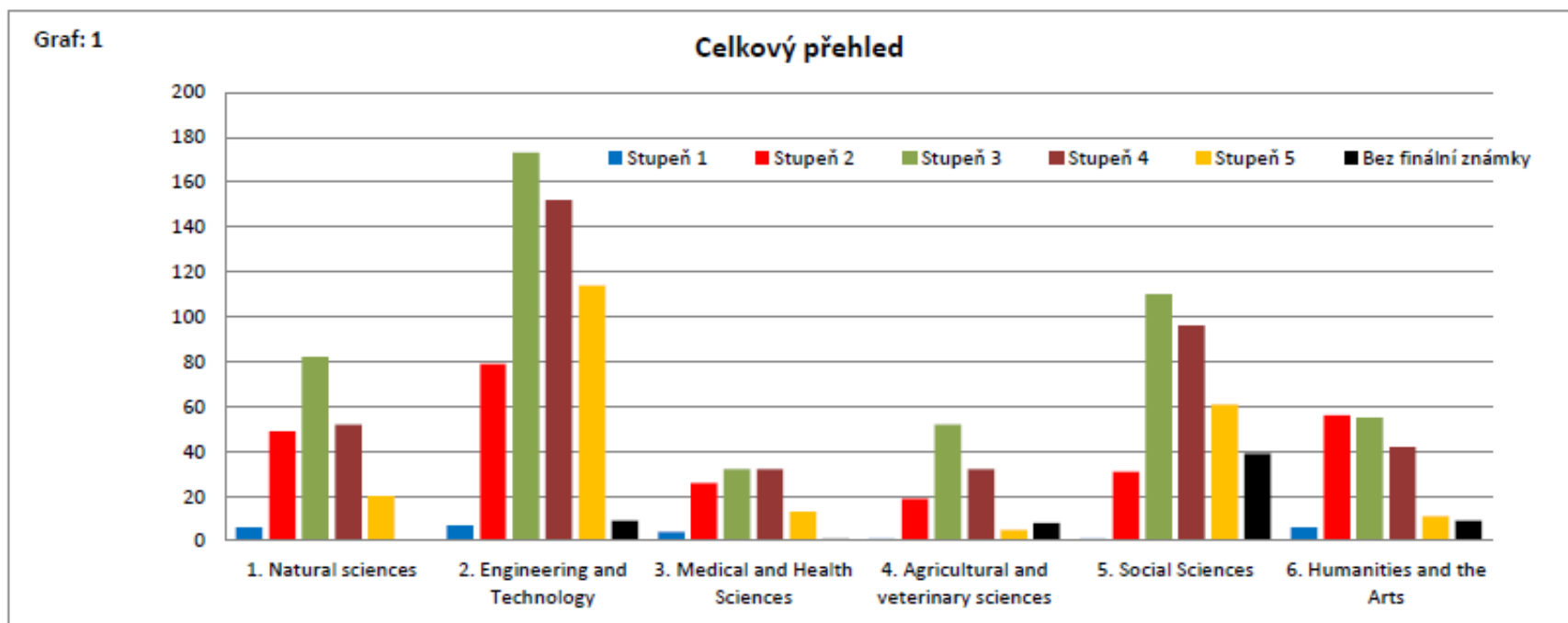
(5) Below-average results, the practical application of which is likely to bring about no change with an economic impact or no change with an impact on Czech society (no real likeliness to have an application in spheres of public interest).

1449 - (500 - 3600 characters including spaces)

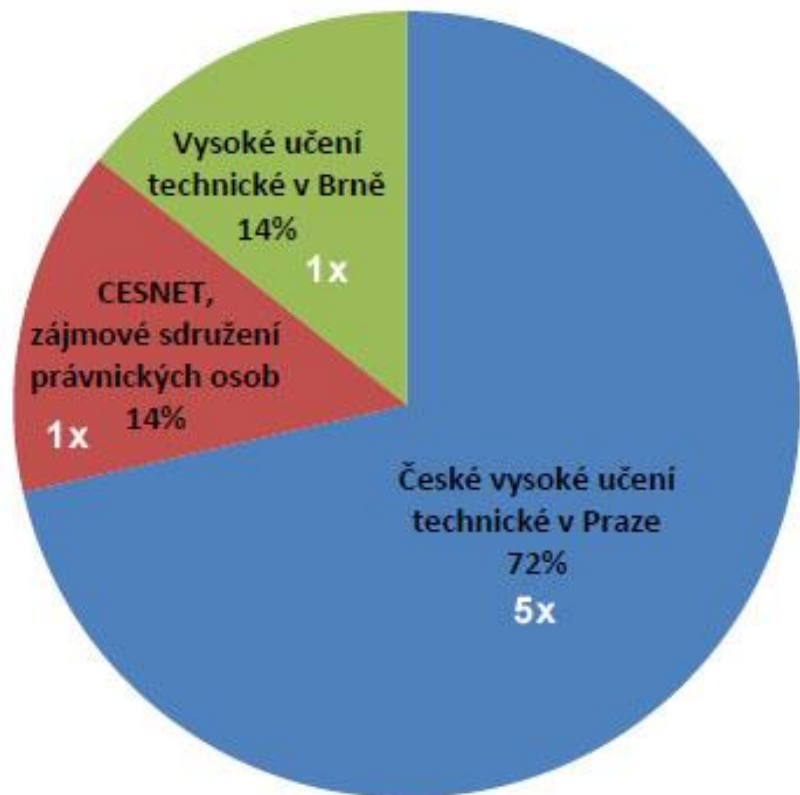
Submit the evaluation

M1 - Quality of selected results - research areas

Finální známka	1. Natural sciences	2. Engineering and Technology	3. Medical and Health Sciences	4. Agricultural and veterinary sciences	5. Social Sciences	6. Humanities and the Arts	Suma
Stupeň 1	6	7	4	1	1	6	25
Stupeň 2	49	79	26	19	31	56	260
Stupeň 3	82	173	32	52	110	55	504
Stupeň 4	52	152	32	32	96	42	406
Stupeň 5	20	114	13	5	61	11	224
Bez finální známky	0	9	1	8	39	9	66
Suma	209	534	108	117	338	179	1 485

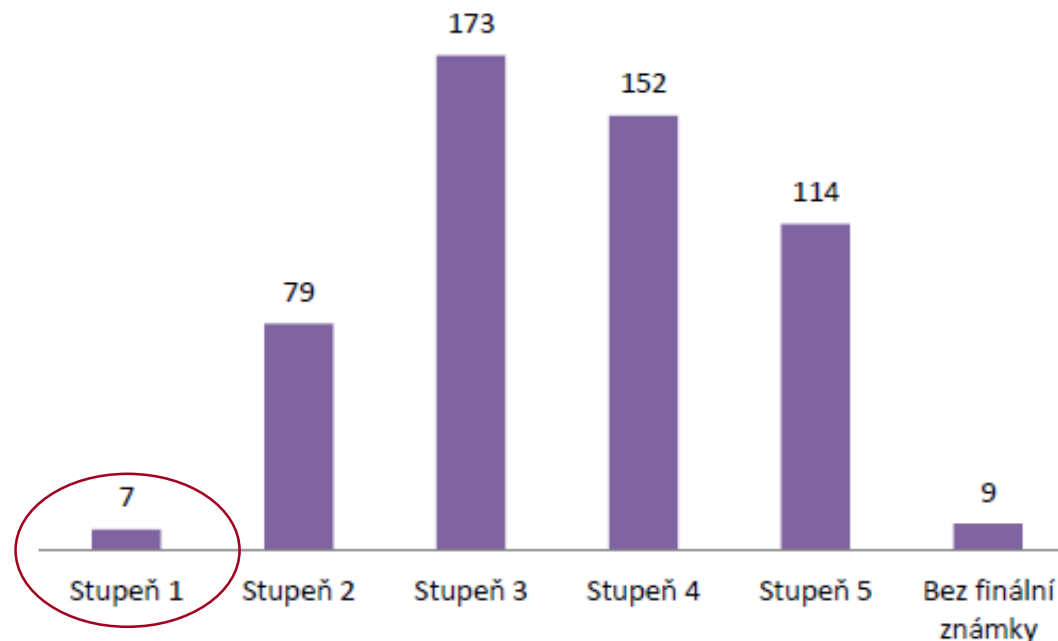


M1 - Quality of selected results



2. Engineering and Technology
Podíl VO na hodnocení
výsledky hodnocené stupněm 1

2. Engineering and Technology Počet hodnocení finální známkou



Tab.: 3 - Podíl VO na hodnocení - výsledky hodnocené stupněm (1,2)

Vědní obor/VO	Počet známek stupeň (1,2)	Podíl
2. Engineering and Technology	86	100%
České vysoké učení technické v Praze	35	41%
Západočeská univerzita v Plzni	8	9%
Vysoké učení technické v Brně	8	9%
Vysoká škola chemicko-technologická v Praze	5	6%
Vysoká škola báňská - Technická univerzita Ostrava	5	6%

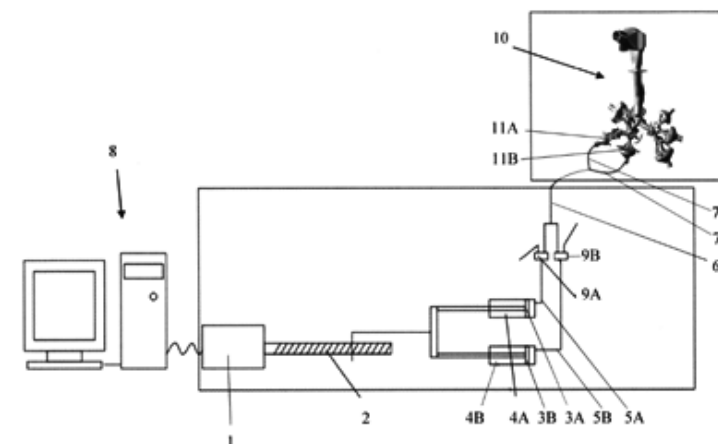
M1 - Quality of selected results

CZ Patent 306136 – Simulátor dýchání (VUT)

.....

Hodnoceno kritériem společenské relevance:

(1) Výsledek na špičkové úrovni (world-leading), jehož využití v praxi přinese zásadní změnu s mezinárodním ekonomickým dopadem (reálný předpoklad širokého uplatnění na více zahraničních trzích atd.), nebo změnu s mimořádným dopadem mezinárodního charakteru na společnost (reálný předpoklad zásadního uplatnění na mezinárodní úrovni v oblastech veřejného zájmu).



Modules of Evaluation M17+

M2 - Performance of research

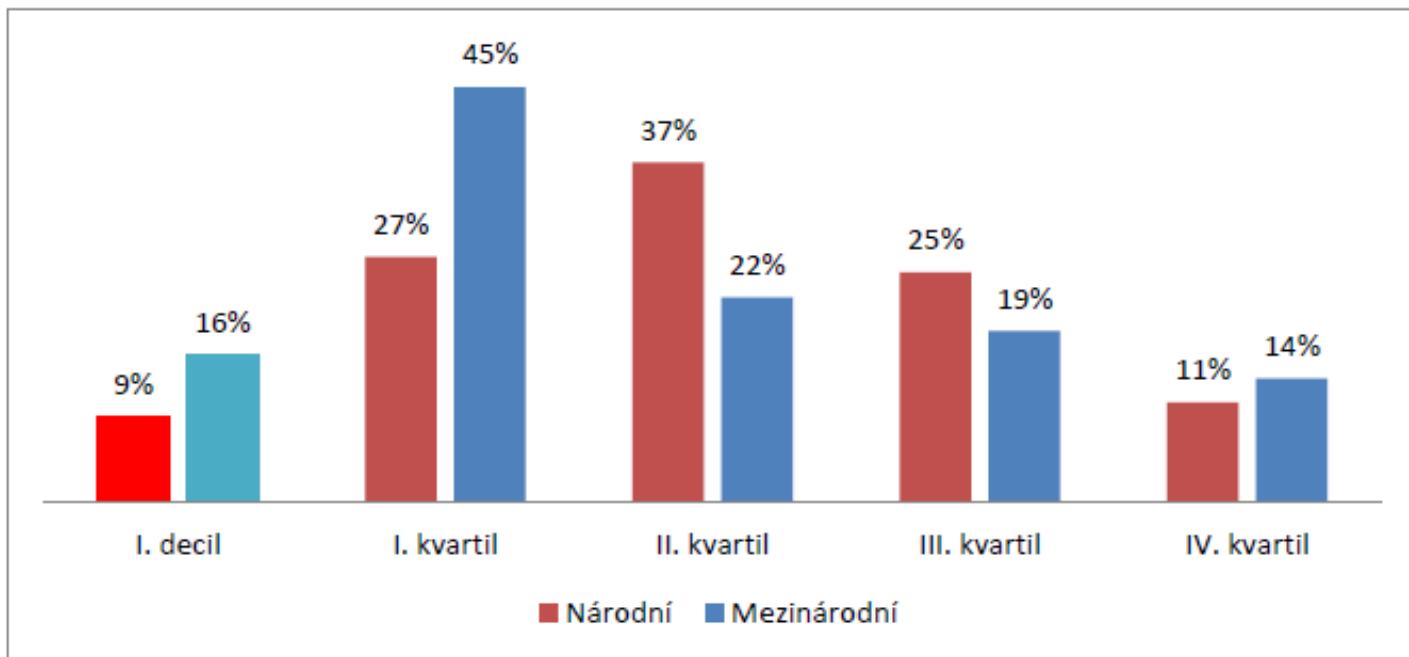
Includes the productivity, quality and competitiveness in the R&D.

- Bibliometric data within evaluated period (fundamental research Jimp, Jsc, D, source = WoS, SJR).
- Article Influence Score (AIS) quartiles (consider citations, number of articles).
- Quantitative indicators (applied research).
- Quantity and structure of the obtained R&D funds (projects, contractual research).
- The number and structure of employees.

M2 – Mechanical engineering

Graf 02b: Srovnání podílů národních a mezinárodních výsledků (článků) oboru v prvním decilu a v kvartilech podle AIS časopisu.

2.3 Mechanical engineering

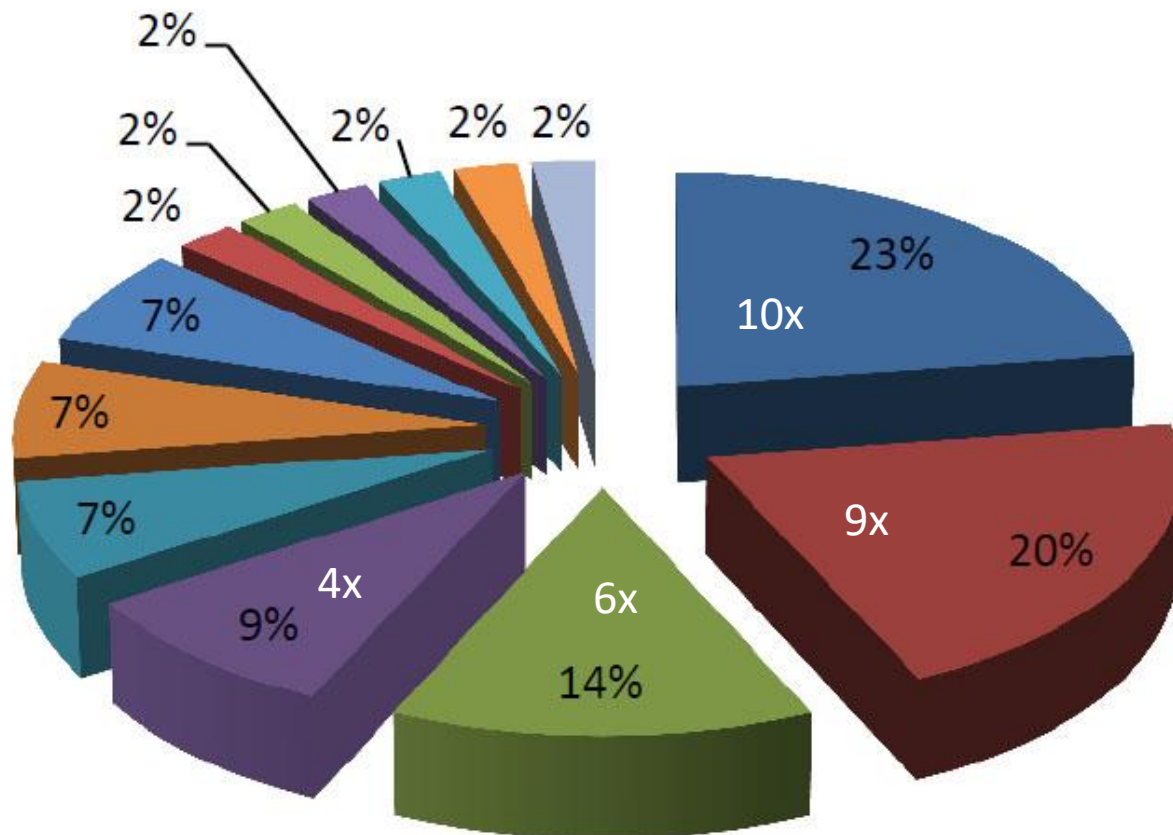


Tabulka 01b: Mezinárodní hranice prvního decilu a kvartilů podle pořadí časopisů a podle pořadí článků na základě AIS.

2.3 Mechanical engineering

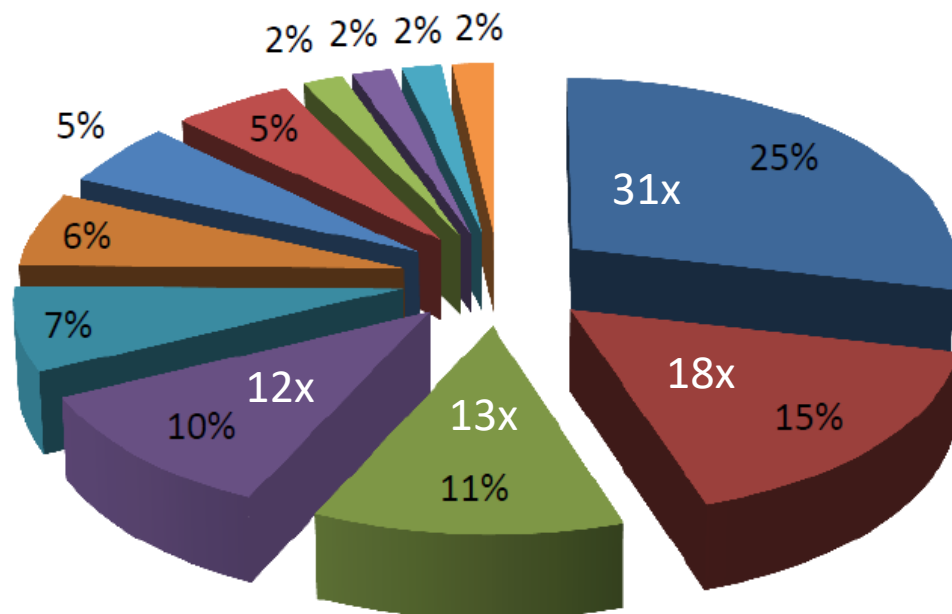
Pásmo	Pořadí časopisů	Pořadí článků
I. decil	0,888	0,922
I. kvartil	0,639	0,749
II. kvartil	0,373	0,553
III. kvartil	0,214	0,304
IV. kvartil	0	0

M2 - Mechanical engineering, 1st decile (AIS)



- Univerzita Karlova
- České vysoké učení technické v Praze
- Vysoká škola báňská - Technická univerzita Ostrava
- Vysoké učení technické v Brně
- Ústav termomechaniky AV ČR, v. v. i.
- Matematický ústav AV ČR, v. v. i.
- Ústav fyziky materiálů AV ČR, v. v. i.
- Fyzikální ústav AV ČR, v. v. i.
- Ústav struktury a mechaniky hornin AV ČR, v. v. i.
- Univerzita Pardubice

M2 - Mechanical engineering, 1st quartile (AIS)

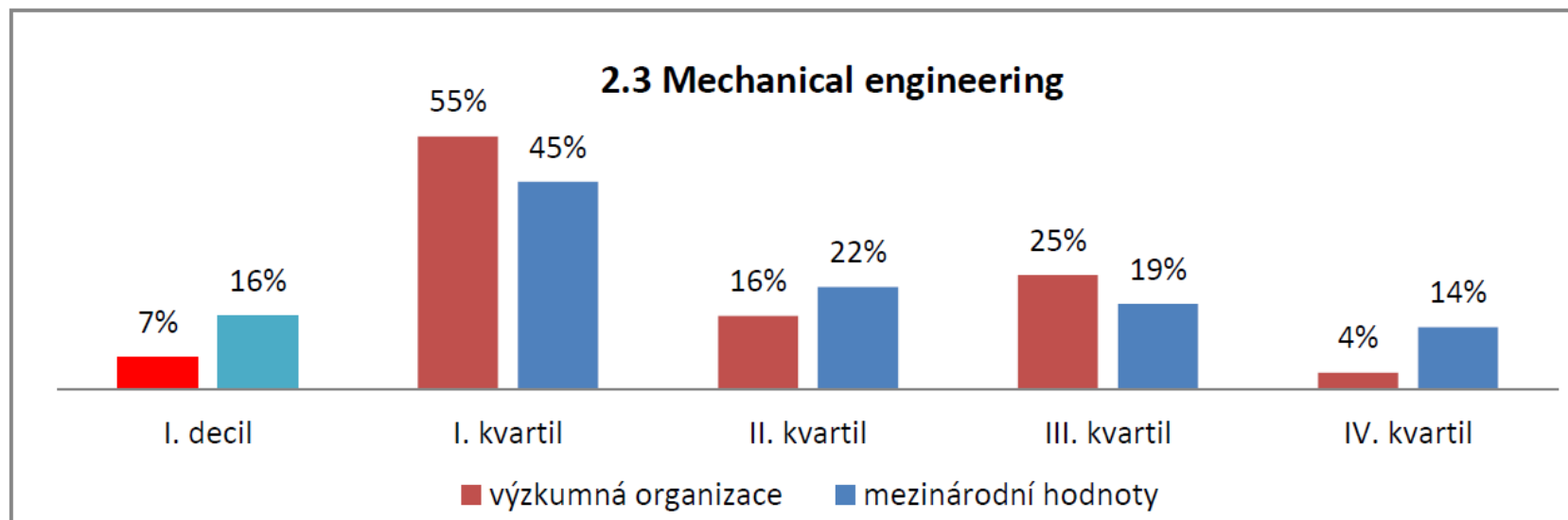


- Vysoké učení technické v Brně
- České vysoké učení technické v Praze
- Univerzita Karlova
- Ústav fyziky materiálů AV ČR, v. v. i.
- Ústav termomechaniky AV ČR, v. v. i.
- Vysoká škola báňská - Technická univerzita Ostrava
- Západočeská univerzita v Plzni
- Matematický ústav AV ČR, v. v. i.
- Fyzikální ústav AV ČR, v. v. i.
- Ústav chemických procesů AV ČR, v. v. i.

M2 - Mechanical engineering



Grafy VO4b: oborové srovnání podílů výsledků výzkumné organizace a mezinárodních výsledků v prvním decilu a v kvartilech podle AIS pořadí časopisů.



Journal - Mechanical Engineering	AIS Quartile 2016
AEROSOL SCIENCE AND TECHNOLOGY	Q1
Advances in Applied Mechanics	Q1
COMBUSTION AND FLAME	Q1
EXPERIMENTAL THERMAL AND FLUID SCIENCE	Q1
EXPERIMENTS IN FLUIDS	Q1
IEEE-ASME TRANSACTIONS ON MECHATRONICS	Q1
INTERNATIONAL JOURNAL OF FATIGUE	Q1
INTERNATIONAL JOURNAL OF HEAT AND FLUID FLOW	Q1
INTERNATIONAL JOURNAL OF HEAT AND MASS TRANSFER	Q1
INTERNATIONAL JOURNAL OF IMPACT ENGINEERING	Q1
INTERNATIONAL JOURNAL OF MACHINE TOOLS & MANUFACTURE	Q1
INTERNATIONAL JOURNAL OF MECHANICAL SCIENCES	Q1
INTERNATIONAL JOURNAL OF PLASTICITY	Q1
INTERNATIONAL JOURNAL OF THERMAL SCIENCES	Q1
International Journal of Precision Engineering and Manufacturing-Green Technology	Q1
JOURNAL OF AEROSOL SCIENCE	Q1
JOURNAL OF FLUIDS AND STRUCTURES	Q1
JOURNAL OF SOUND AND VIBRATION	Q1
MECHANICAL SYSTEMS AND SIGNAL PROCESSING	Q1
NONLINEAR DYNAMICS	Q1
Nanoscale and Microscale Thermophysical Engineering	Q1
PROBABILISTIC ENGINEERING MECHANICS	Q1
PROCEEDINGS OF THE COMBUSTION INSTITUTE	Q1
PROGRESS IN ENERGY AND COMBUSTION SCIENCE	Q1
WIND ENERGY	Q1
APPLIED THERMAL ENGINEERING	Q1
JOURNAL OF ENGINEERING MECHANICS	Q1
JOURNAL OF HYDRAULIC ENGINEERING	Q1
MECHATRONICS	Q1
RAPID PROTOTYPING JOURNAL	Q1
TRIBOLOGY INTERNATIONAL	Q1
WEAR	Q1
FATIGUE & FRACTURE OF ENGINEERING MATERIALS & STRUCTURES	Q2
Friction	Q2
INTERNATIONAL JOURNAL OF PRESSURE VESSELS AND PIPING	Q2
INTERNATIONAL JOURNAL OF REFRIGERATION-REVUE INTERNATIONALE DU FROID	Q2
International Journal of Engine Research	Q2
JOURNAL OF HEAT TRANSFER-TRANSACTIONS OF THE ASME	Q2
JOURNAL OF MANUFACTURING SCIENCE AND ENGINEERING-TRANSACTIONS OF THE ASME	Q2
JOURNAL OF MECHANICAL DESIGN	Q2
JOURNAL OF SANDWICH STRUCTURES & MATERIALS	Q2
JOURNAL OF VIBRATION AND ACOUSTICS-TRANSACTIONS OF THE ASME	Q2
JOURNAL OF VIBRATION AND CONTROL	Q2
Journal of Mechanisms and Robotics-Transactions of the ASME	Q2
MECHANISM AND MACHINE THEORY	Q2
PROCEEDINGS OF THE INSTITUTION OF MECHANICAL ENGINEERS PART F-JOURNAL OF RAIL AND RAPID TRANSIT	Q2
Structure and Infrastructure Engineering	Q2
THEORETICAL AND APPLIED FRACTURE MECHANICS	Q2
TRIBOLOGY LETTERS	Q2
VEHICLE SYSTEM DYNAMICS	Q2

M2 - Mechanical engineering



Tabulka a graf VO4d: Porovnání národního oborového mediánu pořadí článků s oborovými mediány výzkumné organizace (výpočet je proveden pouze pro obory s počtem výsledků ≥ 10)

Vysoké učení technické v Brně

Obor	Medián oboru pro VO	Národní medián oboru	Poměr k národnímu mediánu
1.1 Mathematics	0,27	0,67	40%
1.2 Computer and information sciences	0,518	0,684	76%
1.3 Physical sciences	0,478	0,862	55%
1.4 Chemical sciences	0,5935	0,614	97%
1.5 Earth and related environmental sciences	0,643	0,766	84%
1.6 Biological sciences	0,672	0,758	89%
1.7 Other natural sciences	1,053	1,053	100%
2.1 Civil engineering	0,624	0,654	95%
2.2 Electrical engineering, Electronic engineering, Information engineering	0,214	0,376	57%
2.3 Mechanical engineering	0,639	0,411	155%



Tabulka a graf VO4c: Porovnání mezinárodního oborového mediánu pořadí článků s oborovými mediány výzkumné organizace (výpočet je proveden pouze pro obory s počtem výsledků ≥ 10)

Vysoké učení technické v Brně

Obor	Medián oboru pro VO	Mezinár. medián oboru	Poměr k mezinár. mediánu
1.1 Mathematics	0,27	0,669	40%
1.2 Computer and information sciences	0,518	0,593	87%
1.3 Physical sciences	0,478	0,614	78%
1.4 Chemical sciences	0,5935	0,634	94%
1.5 Earth and related environmental sciences	0,643	0,74	87%
1.6 Biological sciences	0,672	0,855	79%
1.7 Other natural sciences	1,053	1,053	100%
2.1 Civil engineering	0,624	0,624	100%
2.2 Electrical engineering, Electronic engineering, Information engineering	0,214	0,56	38%
2.3 Mechanical engineering	0,639	0,553	116%



Modules of Evaluation M17+

M3 Social relevance (evaluated unit - faculty)

- Results transfer to the practice, cooperation with industry, impact on society, economic benefits, etc.
- Participation of students in research activities: implementation of doctoral students, prestigious award, mobility, popularization, etc.

M4 Viability (evaluated unit - university)

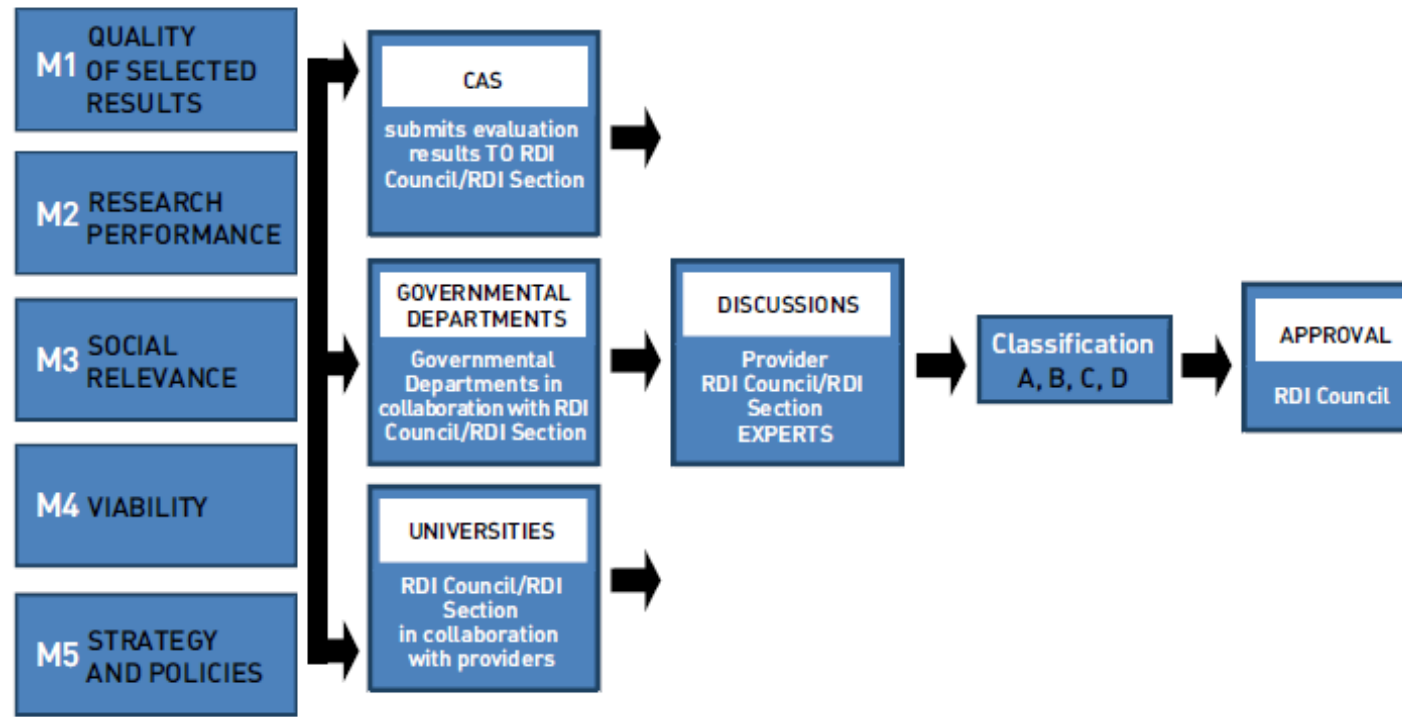
- Research environment - organization scheme, quality of research management, personnel policy, structure of human resources, research infrastructure.
- International and national co-operation - membership in the global and national research community.
- Financing from external sources - success in obtaining projects, successfully completed grant projects, the position of RO according to international indicators and statistics.

Modules of Evaluation M17+

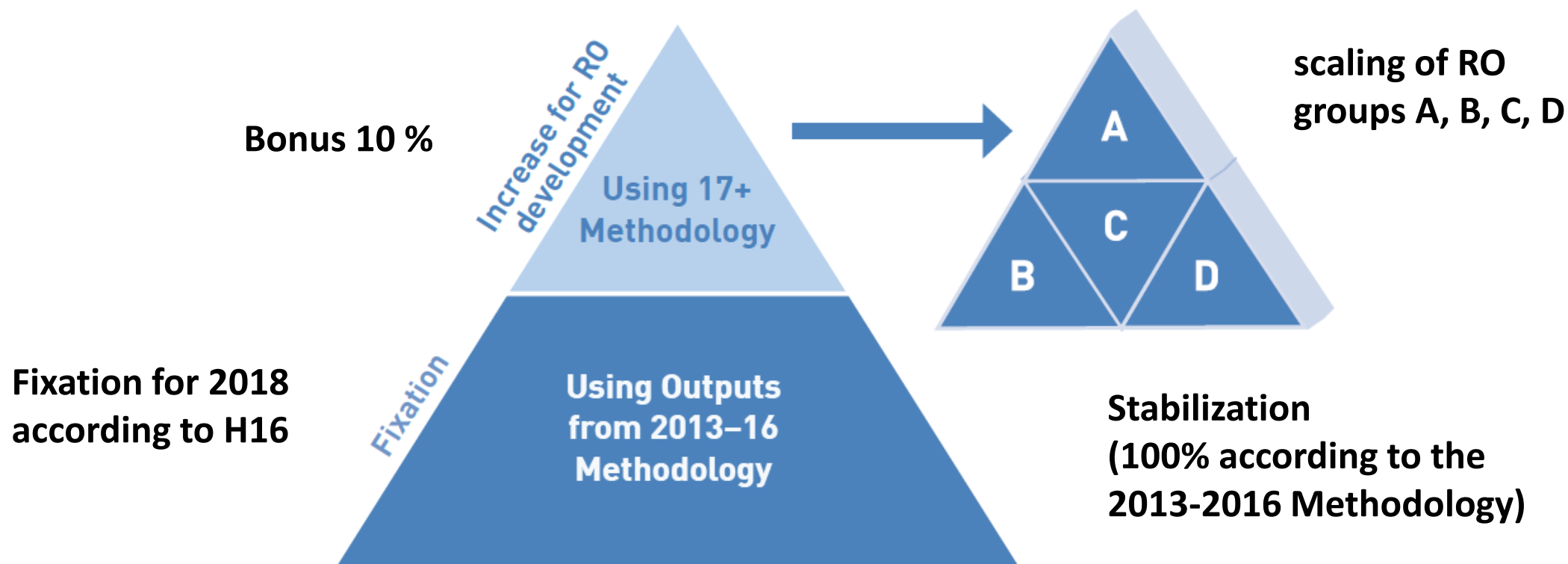
M5 Strategy and concept (evaluated unit - university)

- Mission of RO (purpose, strategic direction), concept, visions for the next period.

Full Five-year Evaluation



Relationship of evaluation and financing M17 +



Conclusions

- M1 – apply high-quality results that are not directly output of the projects.
 - evaluation depends highly on the description of the result
- M2 – independently on the number of authors.
 - to compare AIS before submitting
- In the first decile some smaller sub-categories have not a relevant journal, more general journals e.g.: (Annual Review of Fluid Mechanics, Applied Mechanics Reviews, JOURNAL OF THE MECHANICS AND PHYSICS OF SOLIDS, PROGRESS IN AEROSPACE SCIENCES).
- The number of publications in Nature or Science will never be a very relevant indicator of excellence in Mechanical Engineering.

DĚKUJI VÁM ZA POZORNOST

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


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GEOLOGICAL

ENGINEERING,
INDUSTRIAL

ENGINEERING,
MANUFACTURING

ENGINEERING,
MARINE

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MECHANICAL

ENGINEERING,
MULTIDISCIPLINARY

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PROGRESS IN ENERGY AND
COMBUSTION



2

INTERNATIONAL JOURNAL OF
PLASMA PHYSICS



3

PROGRESS IN ENERGY AND
COMBUSTION



4

INTERNATIONAL JOURNAL OF
MANUFACTURING RESEARCH



5

Advances in Mechanical
Engineering



6

COMBUSTION AND FLAME



7

MECHANICAL SYSTEMS AND
SIGNAL PROCESSING



8

NONLINEAR DYNAMICS

Full Journal Title

ISSN

Journal
Impact
Factor

Article Influence
Score

Customize Indicators

JCR Abbreviated Title

Total Cites

Journal Impact Factor

Impact Factor without

Journal Self Cites

5 Year Impact Factor

Immediacy Index

Citable Items

Normalized Eigenfactor

Cited Half-Life

Citing Half-Life

Eigenfactor Score

Article Influence Score

ISSN

% Articles in Citable Items

Average JIF Percentile

Save

0360-

26 242

7 138

0916-

2180

4.494

0888-

3270

1.070

1.004

0924-

090X

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0.837

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ENGINEERING,
GEOLOGICAL

ENGINEERING,
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MANUFACTURING

ENGINEERING,
MARINE

ENGINEERING,
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