

Methodology of evaluation of research and professional activity of research-oriented institutes of the Czech Academy of Sciences for the period 2015–2019

Preamble

One of the most important tasks of management of the Czech Academy of Sciences (hereinafter referred to as "CAS") and of its institutes is the **permanent emphasis on the increasing quality of the research and professional activity**, involvement of the institutes in international research activity and quality realisation of other functions of CAS given by relevant legislative provisions. To meet this task, CAS has been organizing regular evaluation of its institutes since the beginning of its existence back in 1993.

Evaluation of research and professional activity of research-oriented institutes of the CAS for 2015–2019 is performed pursuant to the Act no. 130/2002 Coll., on support of research, experimental development and innovations from public resources and on the amendment of some related acts (Act on support of research, experimental development and innovations) as amended. It is the base for meeting provision of sec. (7)(7) of this act: *"The provider will grant the institutional support for a long-term conceptual development of the research organisation on the basis of its evaluation, which was carried out pursuant to a methodology prepared in compliance with sec. 35 (2)(c)."* Thus the results of the evaluation are one of the background documents for differential institutional funding of the institutes of the CAS.

This evaluation methodology **follows up the Methodology for Evaluating Research Organizations and Research, Development and Innovations Purpose-tied Support Programmes (so called Methodology 17+)**, which is being implemented on the national level by the Government Office. Both methodologies have many elements in common since the Methodology 17+ uses some elements of the previous CAS evaluation but it is also different in many aspects due to the different size of the subjects evaluated and their different mission. Performance of both methodologies are complementary and interacting processes within which institutes of the CAS are evaluated based on implemented Methodology 17+ modules but at the same time CAS performs more detailed international evaluation whose results and experiences are important for further steps in implementing the Methodology 17+.

Article 1

General principles

1) Objectives of the evaluation

The evaluation pursues the following basic objectives:

- a) Increase the quality of research and professional activity of the institutes by providing detailed and independent information about institutes and research teams to their respective management.
- b) Acquiring objective information about position of institutes of CAS within national, European and global context and using it for strategic management of CAS as a whole, including the funding of the institutes as one of the component aspects of the management.

2) Principles of the evaluation

The evaluation is based on the following principles:

- a) Informed peer-review: the evaluation uses these evaluation tools – peer review of selected outputs, bibliometrics, institutes and particular research teams reports and visits in institutes, all of which are used as background data for the informed peer-review.
- b) Field-based character: the evaluation will be carried out for the individual fields respecting the field specifics.
- c) Two-phase character: the evaluation will consist of two subsequent phases:
Phase I: field-based informed peer-review evaluation of *outputs* of the research activity of institutes of CAS using international panels and remote evaluators,
Phase II: international informed peer-review of institutes and their research teams.
- d) Transparency: continuous awareness inside CAS will be a part of the evaluation itself, the outputs of the evaluation will be made reasonably accessible to institutes of the CAS and the general public.
- e) Separation of evaluation from funding: after both of the phases of the evaluation are finished, there will be a discussion with management of particular institutes of CAS on the CAS management level; after that a decision will be made about institutional funding of the institutes in the next period.

3) General rules in Phase I of the evaluation

- a) In Phase I of the evaluation particular outputs of the research activity of the institutes and its *research teams* will be evaluated.
- b) The evaluation will take place in 42 *fields* which make up 6 main *fields* - as for its content pursuant to the field-based classification in accordance to the Frascati Manual 2015, OECD. The fields are for the purposes of the evaluation split in 12 *field panels* (hereinafter referred to as "panel") – see **Annex 1**.
- c) Each *institute of the CAS* registers for the evaluation by means of an *application* on prescribed electronic forms. The application requirements are specified in Article 4.
- d) The institute registers each of its research teams with one field panel and in one field within the framework of this field panel.
- e) The content of the submitted applications will be checked from the viewpoint of the formal requisites and completeness of the content. The check will be carried out by the Support of Science Division of the Head Office of the CAS (hereinafter referred to as "Science Support Division"), and if needed the application will be returned to the institute to complete it.
- f) Bibliometric analysis (see Article 5, **Annex 2**) shall be the part of the input data in Phase I of the evaluation. The Library is responsible for elaboration of the bibliometric analysis.
- g) Scientific quality of outputs of each team achieved in the period of 2015–2019 (hereinafter referred to as "evaluated period"), which were submitted to evaluation pursuant to the rules described in Article 4 and 5 will be evaluated within Phase I of the evaluation in international context.
- h) Each output submitted to the evaluation will be classified by one of the five *quality levels* on the *quality level scale*. Based on this classification *quality profiles* of the research activity of the teams will be prepared as well as an overview of field-based outputs, which will be a part of the final report of Phase I (**Annex 9**). International *field panels* will perform the evaluation of the submitted outputs.
- i) The outputs for Phase I will be submitted in the language of the original, the communication with the panel and evaluators will be in English.

The method of the formation of panels and rules for evaluation in Phase I are specified in Article 5.

4) General rules in Phase II of the evaluation

- a) The institutes of the CAS as a whole and their teams will be evaluated in Phase II especially as for the quality, societal relevance and vitality/perspective of its activity (for detail see Article (6)(3)).
- b) Phase II of the evaluation will be carried out by international commissions established for particular research fields (hereinafter referred to as "field commission" or "commission").
- c) The background documents in Phase II will be presented in English, the communication with commissions will be in English.
- d) Phase II will include on-site visits to the institutes by the commissions.
- e) Evaluation reports for each team elaborated by particular commissions will be the outcome of the evaluation in Phase II as well as overall evaluation reports for each institute (for details see Article 7).

The method of the formation of commissions and rules for evaluation in Phase II are specified in Article 6.

Article 2 Coordination board

Coordination board (hereinafter referred to as "Board") will be the coordination body of the evaluation. After discussion with the CAS Academy Council and Council for Sciences of the CAS, the President of the Czech Academy of Sciences shall appoint the President and Deputy Chair of the Board.

Coordination Board:

- a) supervises the progress of the evaluation from the organisational viewpoint and from the viewpoint of the abidance by the principles of the evaluation, not intervening in the professional evaluation itself by the field panels in Phase I and by the commissions in Phase II of the evaluation,
- b) solves controversial cases concerning the formation of research teams for the purposes of the evaluation,
- c) solves uncertainties and relevant questions from the panels, impetuses and findings of the observers,
- d) assesses relevance of objections of the directors of CAS institutes to the final reports and proposes possible reassessment of particular parts by commissions in Phase II,
- e) solves possible conflicts of interests; at the same time it is also the reporting point of these possible conflicts,
- f) assesses possible change of communication language,
- g) submits a report about its activity to the Academy Council of the CAS after each phase and the summary report on the progress of the evaluation.

The Coordination Board of the evaluation has access to all documents and processes in both phases of the evaluation.

Article 3

Field and organizational structure

1) Fields, main fields, panels

The evaluation in Phase I takes place within 12 panels joining 42 fields altogether. Detailed fields classification is listed in **Annex 1**.

- a) The term *field* means a group of scientific disciplines related by content.
- b) A *main field* is a set of content-related fields.
- c) *Panel* is a group of experts who will coordinate the assessment of research outputs included to one of the fields coming under that field panel during Phase I of the evaluation. The panel is led by the *panel chair*. The other experts who comprise the panel are the *panel members*.
- d) *The evaluators* are the experts who assess the outputs submitted for the evaluation in Phase I. Each panel is assigned a group of evaluators, whose professional orientation corresponds with the fields assigned to the particular panel (or to any of these fields). The evaluators are not panel members.

2) Institute

For the purposes of the evaluation, an institute means a public research institution established by the CAS. Centre of Administrations and Operations of the CAS and Library of the CAS are not subject to this evaluation. These centres will be evaluated pursuant to the Methodology of evaluation of professional activity of research-infrastructure focused institutes of the CAS.

3) Research team

For the purpose of the evaluation, the smallest unit is a *research team* (hereinafter referred to as "team"). The team is the smallest unit of the evaluation structure on whose level the aggregated results of the evaluation will be published. The team is defined as a group of *researchers* and *other workers* who participate in solving problems whose content is defined by a narrower area of research.

Rules for the team determination:

- a) Team is usually identical to a research unit defined as an organisational unit in the official organisational structure of the institutes (e.g. department). With respect to the number of members, some organisational units may be divided into several teams or merged in a single team for the purposes of the evaluation. This decision is reserved to the management of the institute. The level of contribution of the units, which provide primarily support services for the institute, research services or administering the research infrastructure will be evaluated in Phase II as part of the evaluation of the whole institute (pursuant to Article (3)(5)(f) and (g)). Each team will be assigned to exactly one panel and one field by the institute (according to the field-based classification).
- b) For the purposes of the evaluation, a researcher is a worker who was in any part of the evaluated period, i.e. from 1 January 2015 to 31 December 2019 classified as a "researcher" at the institute pursuant to article (III)(1) of Career Development Rules¹ or was an emeritus scientist/scholar of CAS pursuant to article (IV) or pursuant to an internal regulation of the given institute. For purposes of the evaluation, the institutes will prepare list of these workers and an average FTE for the evaluated period.
- c) Other worker means a worker, who in any part of the evaluated period, i.e. from 1 January 2015 to 31 December 2019 was classified as a research assistant or a graduate student pursuant to article (II) of Career Development Rules and is not

¹ [Career Development Rules for CAS Employees with a University Degree](#) (internal regulation 5/2008).

a researcher pursuant to letter (c). Average FTE for the evaluated period is to be indicated also for graduate students. Possible individual scientific outputs of other workers may be reported within presented team results in Phase II of the evaluation².

- d) Only a worker who had employment contracted with the institute in any part of the evaluated period from 1 January 2015 to 31 December 2019, may be included in a research team; neither an agreement on work performance, nor an agreement on working activity is regarded as employment.
- e) For the purposes of the evaluation, each researcher and other worker has to be included as a member of only one team within the institute but at the same time, however, he/she may be concurrently listed as a team member of another institute.
- f) Technical workers (not laboratory technicians) and administrative workers are not regarded as team members for the evaluation. The data concerning them are only summarily listed for the institute as a whole (Article 4).
- g) The Board will decide about the admissibility of a team consisting of less than 4 researchers (FTE) based on a written explanation included in the application and following discussion with the director of the respective institute (see Article 2 and 4).
- h) Any suggestions regarding team compositions that may differ from the official organisational structure must be clearly described and reasoned in the application (see Article 4). These proposals will be discussed and decided by the Board (Article 2) during the verification of the applications.

Article 4

Application requirements

1) Application to the evaluation

Each institute will submit ***Application of the institute to the evaluation*** (hereinafter referred to as "application") within the given deadline by which it registers its research teams to the evaluation. The application means an electronic document containing all the materials for Phases 1 and 2 of the evaluation specified below. The application is prepared by the institute in the prescribed content structure and in accordance with instructions about what particular parts have to be included and what is the extent. Particular parts of the application are to be completed continuously pursuant to binding timetable (**Annex 10**).

The application is submitted by the director of the institute to the Science Support Division through an electronic application designated for this purpose. After completion of all parts of the electronic application, the director shall send dated and signed title page of the application to Science Support Division by 7 December 2020.

2) Parts of the application

The application consists of the following parts:

- a) Part 1: General data concerning the institute and individual teams.
- b) Part 2: Background data for Phase I of the evaluation elaborated for each research team of the institute.
- c) Part 3: Background data for Phase II of the evaluation, elaborated:
 - c1) for institute as a whole,
 - c2) for each research team of the institute.

² See Article 4 "Application requirements".

3) Requisites of the general part of the application

- a) The name of the institute.
- b) A scheme of the organisational structure of the institute in accordance with the Organisation Rules valid as of 31 December 2019.
- c) The sum of the full time equivalents of technical and administrative workers as of 31 December 2019.
- d) The division of the institute into *research teams for the purposes of the evaluation*. The teams are indicated by serial numbers and names.
- e) Data for each team contain:
 - e1) field panel (for field panels that contain several fields also the field) in which the team is to be included for the evaluation (pursuant to Article 3 and **Annex 1**),
 - e2) list of names of all researchers in the team in the evaluated period (indicating former team members) and their average total full time equivalent³, separately for the categories of 3a through 5 or as the case may be of 1 and 2 of the Career Development Rules. The list of names must be submitted by 31 January 2020.
 - e3) number of all outputs affiliated to the institute in the evaluated period of which the team members are authors or co-authors in the prescribed structure by types: articles in impacted journals, articles on other journals, books (monographs), book (monographs) chapters, contributions to proceedings, licensed patents and other applied results.
 - e4) brief description of team's activity.

4) Requisites of the application to Phase I of the evaluation

The background data for Phase I of the evaluation are as follows:

- a) The list of up to $2k$ (different) outputs, where k value corresponds to the average aggregate full time equivalent¹³ of the researchers and graduate students of the team. This number of outputs shall be rounded to a whole number⁴. The selected outputs must be submitted by 19 February 2020 and shall meet the following requirements:
 - a1) Each output is to be assigned to precisely one panel (field) and one subfield pursuant to Web of Science (further "WoS"). For presented outputs with authors from several teams or institutes of the CAS (see above), the teams within one institute or relevant institutes must agree with each other in advance to which panel (field) and subfield will the output be submitted to. Each output will be accompanied by a brief textual comment explaining why the given output of the team is considered significant and quality. This commentary must be submitted by 15 March 2020. (It will be necessary to specify the exact contribution of the team and the institute to the creation of the output within Phase II of the evaluation.)
 - a2) In exceptional cases the author of the submitted output does not have to be in the position of a researcher (they may be, for instance, a graduate student who is employed by the given institute). Such outputs may be submitted based on an explanation from the director of the institute.
 - a3) The submitted output must be affiliated to the institute.
 - a4) Date of output publication (publishing of an output online, of a printed version of an article, publication of a book, grant of a patent, or of another output) must belong to the evaluated period.

³ To be indicated as the average of the sum of the full time equivalent (FTE) of researchers and graduate students of the given team in every year of the evaluated period, so $k = (\Sigma FTE_{2015} + \Sigma FTE_{2016} + \Sigma FTE_{2017} + \Sigma FTE_{2018} + \Sigma FTE_{2019}) : 5$, with two decimal places. Problematic or disputable cases will be solved by the Board.

⁴ 5 tenths are to be rounded up.

- a5) Also WoS subfield is indicated with the output within the panel and field, within which the output has to be evaluated⁵ (**Annex 1**).
- a6) If the submitted output does not belong by its content to the field panel in which the team is registered, the field panel to which the output belongs is marked, listing also the relevant field and subfield. The rules concerning the assignment of the panels, fields and subfields are specified in **Annex 1**.
- b) If a team submits smaller number of outputs than as indicated in a), it shall explain its reasons in the background data for Phase II of the evaluation (see paragraph 5 and below).
- c) Bibliometric analysis pursuant to specifications in **Annex 2** shall be prepared for the evaluators for particular outputs listed in WoS Core Collection of the "Article", "Review", "Conference proceedings" types. The institutes will be asked to perform check of the bibliometric data before the beginning of Phase I.
- d) In case of outputs classified in humanities and social science field panels, it is possible to give information about the most important scientific response, i.e. about reviews and up to five most important citations.
- e) In case of outputs of a technical type (patents, utility models, verified technologies, etc.) these shall be submitted in a form of English description of the output elaborated for the purpose of the evaluation.
- f) Selection of all outputs for the evaluation will be implemented by electronic interface by marking the outputs which had been registered in ASEP database. Director of the institute will submit the outputs for evaluation.
- g) By 31 March 2020, the institute shall ensure access to the full texts of the submitted outputs by means of ASEP database. If the electronic inclusion of a monograph in the ASEP cannot be ensured, two of its copies must be sent to the Science Support Division within the same deadline. The Science Support Division will ensure their delivery to the Library, which will ensure sending to the evaluators abroad. Science Support Division is not responsible for not returned monographs. The term to provide the access to full texts will be set so that it is in sufficient time before the beginning of Phase I of the evaluation.
- h) Outputs of collective works of more than 30 authors (large collaborations) will be evaluated during Phase II and shall not usually be submitted in Phase I.

5) Requisites of the application to Phase II of the evaluation

Within Phase II of the evaluation, the institute submits information for each team individually and for the institute as a whole.

Data for an institute as a whole

- a) All grant and programme projects supported from the public means from the national, the EU and foreign programmes within the evaluated period of which the institute is a recipient, or co-recipient (name, provider, investigation period, overall targeted funding to the project for the institute in the evaluated period in thousands of CZK). Additional information may be listed in the data on the particular team.
- b) Research for practice (applied research and cooperation with application sphere), contractual research (project name, ordering party, time period, revenues in thousands of CZK), collaborative research (research in collaboration) and transfer of technologies (patents, licences and application in market). The institute shall further support with evidence that it has identification system of research results with application potential, their records, administration of intellectual property and how it pays attention to

⁵ Example: A team is registered in panel 8 Medical and Health Sciences. It contains several fields and the fields include subfields. The information shall be e.g. panel 8 / field 3.1 / subfield 4. This means: panel 9 Medical and Health Sciences, field 3.1 Basic medicine, subfield 4 Pharmacology and pharmacy.

knowledge and technologies transfer. Additional information may be listed in information about particular team.

- c) Cooperation with universities: joint institutes (mission, organizational structure, funding, outputs), summary on pedagogical activity of the institute.
- d) Information about its activity in the area of research outreach (media strategy, courses and lectures for general public, popularisation publications, educational films, videos, television and radio programmes, children and youth educational activities and other activities in the interest of general public).
- e) Publishing activity concerning scientific books and periodicals.
- f) Research services: library, database, collections and others.
- g) Administration of research infrastructures (brief description of the infrastructure, service portfolio, principles of the access to the infrastructure, characterisation of the users community, data about utilisation including the ratio of external and internal users, characterisation of the results achieved based on their utilisation, involvement in international cooperation, development strategy). Research infrastructures mean⁶ a unique devices or platforms which provide the research community with resources and services for performing top research and development and which are established for use by also other research organizations and other users under transparent conditions defined in advance.
- h) Information on the activity of the institute
 - h1) The institute mission.
 - h2) Description of the main research directions investigated by the institute. The maximum extent is 10 pages.
 - h3) Qualitative and quantitative description of HR policy of the institute (age structure, qualification structure, staff structure from the viewpoint of the international representation, description of the recruitment process, way of evaluation of researchers and teams, qualification growth, support in gaining DSc. degree, earned awards, international mobility, measures to support work-life balance).
 - h4) Strengths and weaknesses of the institute.
 - h5) Strategy plan of the institute as a whole for the period of 2020–2024.
 - h6) Implementation of recommendations from past evaluation.
 - h7) Cooperation within international research area: the institute will indicate a cooperating institute in national and international context, the form of cooperation, main outputs/results and a way of providing the cooperation.

Data for individual teams

- a) A report on the research activity in the evaluated period including characterisation of the main scientific results achieved by the team during the evaluated period. The description of a result achieved in cooperation with other teams must clearly specify the team's share on its creation (i.e., the particular activity with which the team contributed to the result). The maximum extent is 10 pages. Additional information:
 - a1) Strengths and weaknesses of the team.
 - a2) Activity plan of the team for the period of 2020–2024.
 - a3) Implementation of recommendations from past evaluation.

⁶ Definition of research infrastructure is based on IPn methodology for research infrastructures evaluation, http://www.msmt.cz/file/33846_1_1/ p. 4-5, the required description includes the main criteria of the evaluation by IPn methodology.

- b) Number of all scientific outputs by particular types⁷ in the evaluated period (2015–2019). Pre-filling of the particular form will be enabled through the ASEP based on the list of all members of the individual teams submitted by the institute.
- c) If the team presents fewer outputs than determined by the rule listed in paragraph 4 (above), it will provide an explanation.
- d) List of all research outputs in the evaluated period with marked authors who were team members within the evaluated period.
- e) The list of all grant and programme projects supported from the public means (including the obtained funding) from the national, the EU and international sources in cases where the principal investigator, a co-investigator or the coordinator of the project for the institute is a member of the given team. The order numbers of grant and programme projects listed under item a) in the section “Data for the institute as a whole” are to be listed.
- f) Research for practice (applied research and cooperation with application sphere), contractual research, collaborative research and transfer of technologies (patents, licences and application in market). The order numbers of the entries of the contractual research listed under item b) in the section “Data for the institute as a whole” plus the specification of the team’s share on this research are to be listed.
- g) Pedagogical activity of team members (regular teaching at universities, supervision of graduate students – supervising activity and consultancy is to be indicated separately) and contractual arrangements.
- h) Participation of team members in activities of scientific community (membership in scientific commissions – Czech Science Foundation and such like, scientific councils, editorial boards, etc.).
- i) Cooperation within international research area: the team will indicate cooperating institute within national and international context, a form of cooperation and a way of providing the cooperation within the joint research activities, scientific networks, research infrastructures.
- j) Outreach activities of team members, i. e. activity in the area of research popularisation (media strategy, courses and lectures for general public, popularisation publications, educational films, videos, television and radio programmes, children and youth educational activities and other activities in the interest of general public).

Article 5

Principles of the establishment and work of panels in Phase I of the evaluation

1) Bodies involved in Phase I of the evaluation

- Field-based panels (12 in total).
- Evaluators.
- Board (see Article 2).

2) Establishment of the field panels in Phase I of the evaluation

- a) Panel chair and panel members will be appointed in the first step. The panel will consist of foreign researchers. The size of the panel will vary depending on the extent and heterogeneity of the field. These must be internationally renowned authorities with no conflicts of interests (**Annex 3**) toward institutes of the CAS in the given main field. The list of nominated chairs and panel members shall be subject to approval by Academy

⁷ Articles in impacted journals, articles in other journals, books, book chapters, proceedings, patents, applied results.

Council and chairs and panel members will be, after the approval, appointed by the President of the Czech Academy of Sciences and contracts will be concluded with them.

- b) The panels will have list of possible evaluators available, who are willing to participate in the evaluation of the outputs. The panel members will assign field-based outputs to the evaluators by on-line information system (further "OIS"). The evaluators will provide the evaluation based on pre-defined rules (**Annex 6**).
- c) Prior to the beginning of the evaluation itself, all panel members including the panel chairs as well as the evaluators will confirm the absence of a conflict of interests in the OIS.
- d) The overview of the outputs under evaluation, the process of evaluation by the evaluators, the communication with the panels and the evaluators, etc. will be ensured by the OIS.
- e) A written description of what is and is not expected from the panel members and the evaluators, the estimated time required and the rules of determination of the reward will be available for the purposes of contacting candidates for panel members and evaluators (**Annex 5**). The subsequent contacting and contracting of all panel members and evaluators will be technically ensured by the Science Support Division. Panel members and evaluators will register on-line.
- f) Institutes will have the opportunity to express their objections to certain experts.

3) Organization of Phase I of the evaluation

a) Field panel and evaluators

The panel is led by the panel **chair**, who coordinates and monitors the work of its members and evaluators but he/she does not evaluate the outputs. The panel chair will decide in the event of a disagreement of the panel. The panel chair:

- Is responsible for providing information to the panel members and evaluators. For this purpose, the panel chair will be equipped with written instructions. He/she can also provide additional ad-hoc explanations either bilaterally, or for all members of the panel. The panel chair presents problematic issues to discussion by the Board, preferably including a proposal of the solution.
- Supervises the progress of work of the panel members using the OIS:
 - Registers in the OIS, confirms that he/she has been informed about the rules (including the exclusion of a conflict of interests) and lists his/her area of expertise.
 - Monitors whether the panel members have distributed the outputs to two evaluators and urge them if need be.
 - If the classification of an output by the two evaluators differs by precisely one quality level (e.g. 1 vs 2, or 2 vs 3), the panel chair decides about the classification upon recommendation of the panel member relevant to the respective field.
 - If the classification of an output by the two evaluators differs by more than one quality level (e.g. 2 vs 4, or 1 vs 3), the panel member relevant to the respective field asks a third evaluator to provide an assessment. The panel chair will decide about the final classification upon recommendation of the panel member relevant to the respective field based on all three assessments, but also if the third assessment is impossible to procure for objective reasons.
 - If over the best effort two required assessments of the output are not provided during the Phase I of the evaluation (no assessment at all or one assessment only), panel chair will decide about the final classification of the output in question upon the recommendation of the panel member relevant to the respective field.

The **panel member** supervises the progress of the work of the evaluators using the OIS:

- Registers in the OIS, confirms that he/she has been informed about the rules (including the exclusion of a conflict of interests) and lists his/her area of expertise.
- Within the framework of his/her field, distributes the individual outputs to the evaluators based on the evaluators' expertise; does not evaluate the outputs him/herself with exception of such cases when required number of assessments of the particular output is not provided (see below).
- Monitors the progress of the work of the evaluators and urge them if need be.
- If the classification of an output by the two evaluators differs by precisely one quality level (e.g. 1 vs 2, or 2 vs 3), prepares a proposal of its final classification and presents it to the panel chair.
- If the classification of an output by the two evaluators differs by more than one quality level (e.g. 2 vs 4, or 1 vs 3), asks a third evaluator to provide an assessment. After the third assessment is prepared, but also if it is impossible to procure for objective reasons, prepares a proposal of the final classification of the output and present it to the panel chair.
- If over the best effort two required assessments of the output are not provided during the Phase I of the evaluation (no assessment at all or one assessment only), prepares a proposal of its final classification and presents it to the panel chair.

The **Evaluator** evaluates the outputs and classifies them by quality levels:

- Registers in the OIS, confirms that he/she has been informed about the rules and lists his/her area of expertise, according to which the panel will assign him/her outputs for evaluation.
- Confirms the acceptance of the outputs assigned for evaluation and the absence of a conflict of interests in the OIS, possibly refusing some (providing objective reasons). Such reasons may include either fundamentally different expertise, or a conflict of interests. He/she peruses the assigned outputs and classifies each of them with a respective quality level.
- Following the dispatching of his/her evaluation of the output, he/she can see the evaluation of the same output by the other evaluator in the OIS. If evaluation by a third evaluator is needed this evaluator does not see the evaluation by the previous evaluators prior to the conclusion of his/her own evaluation.

b) Outputs evaluation procedure

- The outputs contained in the applications (with the Digital Object Identifiers listed, if they exist) for a field panel are assigned to the evaluators by the panel members relevant to the respective field.
- Each output will be evaluated by 2 evaluators in such a way as to ensure the greatest possible correspondence between the expertise of the evaluator and the methodical focus of the output (according to the fields and subfields).
- The assignment must not represent a conflict of interests as specified in the **Appendix 5.1**.
- If the evaluator refuses to evaluate an output on principle because it does not correspond to his/her expertise or does not react to the request for evaluation, the panel member relevant to the respective field assigns the output to another evaluator. If the panel member relevant to the respective field does not find a suitable evaluator in the list, he/she proposes an external ad hoc evaluator and assigns him/her the output for evaluation.

c) Technical background of Phase I of the evaluation

- The OIS will provide services for the evaluation procedure. It will contain three basic information sections: concerning the outputs of research, the evaluators and the outcomes of evaluation of the outputs. The information about the outputs of the research will be accessible to the evaluated institutes, panel chairs and panel members and evaluators. The information about an evaluator will be accessible to the evaluator him or herself, the panel chair and panel members of the respective panel and the Board. During evaluation process, the information about the outcomes of evaluation of each individual output will be accessible only to the panel chair and panel members. Any access will be personal, based on a *user name* and *password*. The OIS will be backed up regularly.
- The OIS will provide the panel chair, the panel members and the evaluators with differentiated online access to the list of the evaluated outputs and the related information. It contains a field for the evaluator's private notes, check boxes for the classification of the output by a quality level, a button for the confirmation of the absence of a conflict of interests, a button for definitive approval of the evaluation of the output (following the confirmation of the absence of a conflict of interests with the output under evaluation). Apart from the full texts of all outputs submitted to the field panel the OIS will enable the panel to monitor the progress of evaluator registrations; to prepare their own notes concerning the expertise of the evaluators and such like; to assign the evaluators to the individual outputs; to send individual or mass e-mail announcements; to monitor the acceptance of output evaluation and the classification of the outputs into quality levels by the evaluators; and, to automatically urge the individual evaluators by e-mail.
- The panel will see the classification of the outputs into quality levels confirmed by the evaluators, and therefore the progress of their work. It may thus easily identify possible disagreements in the evaluation.

4) Evaluation scale

In Phase I, the main evaluation criteria are the scientific quality and/or societal relevance of the team's outputs. Classification of the output in accordance with the evaluation scale is to be performed regardless of the level of contribution of the evaluated unit and its members to creation of the output. The evaluator may take the bibliometric indicators into account, which are provided along with complete data about the output and which are of supportive nature. In Phase I of the evaluation, the outputs will be graded on a 5 level-quality-scale:

1. Quality that is world-leading in terms of originality, scientific significance and rigour, and/or with actual or likely future groundbreaking innovative potential.
2. Quality that is internationally excellent in terms of originality, significance and rigour but which falls short of the highest standards of excellence and/or highly sophisticated result with actual or likely future significant innovative potential.
3. Quality that is recognized internationally in terms of originality, significance and rigour, and/or result of recognisable novelty with actual or likely future innovative potential.
4. Quality that is recognized acceptable in terms of originality, significance and rigour, and/or result representing improvement with actual or likely future potential to contribute to society or economy.
5. Quality that falls below the standard of scientific work.

The grading awarded will be commented with a short text which reasons the awarded level, e.g. whether and how the output contributes to the existing knowledge, whether it is brand new or broadens and/or builds upon a known theory, whether it represents a generally known concept, whether a non-theoretical output is practically oriented, what kind of impact the output

has in the given scientific field, and whether certain important aspects have not been overlooked, etc. It is also possible to state whether the quality of the output corresponds exactly to a given grading (say N) or it is rather better (N+) or worse (N-).

For reviews, comparative studies and monographs which do not contain many original results, it is necessary to consider whether they introduce a new perspective on existing knowledge, methods or data. The main criterion is whether and to what extent these outputs stimulate progress and/or represent new directions within a given field.

The above-mentioned range "world-leading", "internationally excellent" and "recognized internationally" represents certain quality standards. It does not involve the nature, national context of some outputs, the place to which the research relates or its target audience. Outputs of research, which specifically relate to the Czech Republic, can therefore be classified as world-leading, similarly to e.g. outputs in the main area of natural sciences.

Outputs to which none of the evaluators awards any grading will be separated from the evaluation.

Article 6

Principles of the establishment and work of commissions in Phase II of the evaluation

1) Bodies engaged in Phase II of the evaluation

- Commissions.
- Board (see Article 2).

2) Establishment of the field commissions in Phase II of the evaluation

- a) The commissions for Phase II of the evaluation correspond with 12 field panels of Phase I (see **Annex 1**).
- b) A commission consists of the chair, the deputy chair and other members, whose number depends on the breadth of the field. Like in the case of the field panels, they will be internationally renowned authorities with no conflict of interests (**Annex 3**). After approval of the Academy Council, chairs, deputy chairs and commission members will be appointed by the President of the CAS.
- c) The commissions will include researchers from abroad as well as from the Czech Republic. These will be important and internationally recognised personalities well acquainted with the functioning (funding and management) of similar institutes abroad and/or the R&D environment in the Czech Republic. The official language in most cases will be English.
- d) To provide transparency and comparability of the evaluation of all institutes in Phase II the following persons will participate as observers in the work of the field commissions:
 - representatives of the CAS, appointed by the President of the Czech Academy of Sciences,
 - representatives of the evaluated institute appointed by the director of the institute.

The observers – CAS representatives will participate in all commissions meetings as well as visits in person of the institutes but they do not intervene in the formulation of the conclusions of Phase II of the evaluation. They may give their opinions only to organizational matters or the abidance by the rules.

Observers – representatives of the evaluated institute may participate in all meetings of particular commissions at the institute except for the final one where evaluation conclusions will be formulated. They do not intervene in the evaluation process, may

answer possible questions of the commission members and may submit their objections to the chair of the commission and the Board during to the process of evaluation.

- e) Institutes will have an option to raise objections against certain personalities.

3) Work of the field commissions in Phase II of the evaluation

Commission Chair:

- a) manages the activity of the commission and is responsible for observing the time schedule,
- b) manages the talks with the institute management, the visit, including presentations of individual teams,
- c) distributes work to the commission members in line with their field competence,
- d) is responsible for elaboration of final reports for the institute and the teams, which the commission has to assess (including categorisation of research teams), and send them by means of OIS,
- e) collaborates with other commission chairs on elaboration of the summary final report of the institute,
- f) collaborates in settlement of objections by the institute to the final reports,
- g) chooses, in close cooperation with the commission, teams for presentations at Closing conference of the evaluation process, while observing the following criteria: high quality of the research, field representation, appeal to a diverse audience, perspective for future development.

The member of the commission familiarizes with the background documents, participates in the on-site evaluation in person and evaluates available data about the activity of teams and institutes. He/she takes records so that it is usable in elaboration of the final report.

Within Phase II of the evaluation, the institutes of the CAS and the research teams will be evaluated from the 2 main and 4 further criteria. The commission may communicate also other findings and recommendations within the final report.

Main criteria:

1. Quality of results: the commission evaluates the quality of the selected outputs of Phase I, the contribution of the workers in reaching the outputs described by the team, as well as the quality of all outputs and results, emphasizes the most valuable discoveries and findings in the fields and their importance to the field(s). The commission also evaluates the contribution of the participation of the authors in large collaborations (form of contribution, quality of the output).
2. Societal relevance (**Annex 8**): the commission evaluates societal relevance of the outputs and results pursuant to CAS and institute mission, it evaluates the functionality of the system for knowledge transfer into practice (licensing, infrastructure accessibility, expert knowledge), its usefulness for society. In social sciences and humanities, it will evaluate the effect of the institute's activities on forming of proper practices in society (in legislative, social, cultural), institute's cooperation with application sphere, its participation in Strategy AV21 and cooperation with regions of the Czech Republic.

Further criteria:

1. Position within international and national context: the commission compares teams and institutes with similar international and national institutes, evaluates scope and quality of international and national cooperation and the role of the institute in such cooperation, possible engagement in broad international cooperation, participation of the workers in the activities of the scientific community (organising of conferences and workshops, invited lectures, awards).
2. Vitality, sustainability and strategy: the commission evaluates further direction from the perspective of the planned research directions, assesses previous research objectives

and their achievement, implementation of recommendations from the previous evaluation, the commission further assesses success in receiving grants, instrumental equipment – its adequacy, further the commission assesses effectivity at the managerial level (organizational structure, planning, directing, controlling, support units), strategy of development of the professional structure and strategy of keeping the top researchers, age structure, career and qualification growth (number of foreign workers, strategy of their recruitment, number of gained DSc. degrees, support of researchers in gaining them and providing background for committees assessing DSc. dissertation, etc.). The commission will also assess creating work-life balance conditions and the approach towards possible gender issues. If the institute is involved in the research centre funded by the National Programme of Sustainability II, the Commission will assess the relation of the institute with regard to the integration, development and sustainability of the research centre.

3. Cooperation with universities and participation in education: the commission evaluates the scope of cooperation with universities on national and international level, effectivity of joint research centres, success rate in supervision of graduate students and their participation in the outputs and further it assesses the participation in master or bachelor studies. The commission further evaluates the intensity of cooperation with universities in the form of teaching (number of semestrial lectures in various forms of study programmes).
4. Outreach activities: the commission evaluates activity in the area of research popularisation, sufficiency of media strategy (courses and lectures for general public, popularisation publications, educational films, videos, television and radio programmes, children and youth educational activities and other activities in the interest of general public); publishing activity, its quality and involvement with the professional organisations in the area of research and development.

4) Phase II of the evaluation will include a visit to the institute with the following programme:

- a) introductory closed meeting of the commission,
- b) public presentation (retrospective and perspective) given by the institute's director including discussion,
- c) activity presentation (retrospective and perspective) of individual teams evaluated by the commission given by the teams' leaders, including discussion,
- d) meeting of the commission with director of the institute,
- e) closed meeting of commission members.

The commission members will perform the evaluation in Phase II based on pre-defined rules (**Annex 7**).

Prior to the final meeting of the commission, the observers – representing both the CAS and the institutes under evaluation, state whether the evaluation visit was in accordance with the rules stipulated in this document. Should any of the observers have doubts about it, they will inform the Board in writing including their reasons, and the Board will decide whether or not the evaluation commission is to take these objections into consideration when formulating the final report.

Background documents for the work of field commissions in Phase II of the evaluation are described in detail in Article 4 (Application). Those, which are the crucial are highlighted here:

- a) Report on the results of activity in the evaluated period (Research Report), containing:
 - specification of the most important results in the evaluated period,
 - in case of teams, detailed specification of contributions of its members to the achievement of these results and of all outputs evaluated in Phase I,

- information on meeting the recommendations of evaluation commissions from evaluation period 2010–2014;
- b) Plan of research and other activities for the following period;
- c) Results of evaluation in Phase I (qualitative profiles of team's outputs);
- d) Bibliometric analysis in Phase II (prepared by the Library) or summary of main scientific responses to the work of the team or institute;
- e) Outcomes of Module 1 and Module 2 implemented on the national level in accordance with the Methodology 17+.

The OIS (see Article 5) will be used also during Phase II of the evaluation. The commissions will receive all relevant information about the teams and institutes they evaluate through the OIS. The institutes under evaluation, the chairs, deputy chairs and commission members and the chair and members of the Board will have access to this information. The chair, deputy chair and commission members have continuous access to current information concerning the conclusions of the evaluation of all individual teams and institutes for the given commission. The chair and members of the Board will have access to current information concerning the conclusions of the evaluation of all individual teams and institutes and all the final reports. The directors of the institutes will receive the final report (see Article 7) concerning their institute and individual teams through the OIS. All accesses will be personal based on a *user name and password*.

Article 7

Final report

The outcome of Phase II of the evaluation and of the evaluation as a whole will have the form of final reports prepared by the respective field commissions.

The final reports for the institute as a whole and for the individual teams shall include:

- a) verbal evaluation pursuant to criteria specified in the Article (6)(3),
- b) conclusion with commission's recommendation,
- c) statement from the observer, representative of the CAS, on the progress of Phase II of the evaluation,
- d) statement from the director of the institute on the progress of the evaluation and the final report. If the institute is of the opinion that the final report violates the principles stipulated by this document or that some facts are inaccurately or incorrectly interpreted in the final report, the director may ask the Board in his/her statement to the final report by 3 June 2021. If the Board accepts the objection as justified, the commission will reassess its final report by 18 June 2021. The institute will subsequently have an opportunity to express its opinion on the final version of the final report by 30 June 2021.

Teams' evaluation will include teams categorisation pursuant to **Annex 7**, including the comment.

The panel chairs of all field commissions, which will participate in the evaluation of the teams of particular institute, elaborate summary final report of the institute based on their mutual communication.

The chairs of the involved field commissions will hand over the final report to the President of the CAS through the Science Support Division. The final reports will have a unified form specified by **Annex 9**.

Article 8

Amending with regard to the COVID-19 pandemic

With regard to ongoing global restrictions connected with the COVID-19 pandemic, the above stated on-site visits of the Commissions in Phase II of the Evaluation will be performed only remotely by using the means of distant communication (videoconference).

List of Annexes:

- Annex 1 – Field-based classification
- Annex 2 – Bibliometrics
- Annex 3 – Conflict of interests
- Annex 4 – Basic facts
- Annex 5 – Mission
- Annex 6 – Guide to Phase I
- Annex 7 – Guide to Phase II
- Annex 8 – Societal relevance of outputs and activities
- Annex 9 – Final reports
- Annex 10 – Timetable

Approved at 23rd and 24th meeting of the Academy Council of CAS held on 12 February 2019 and 12 March 2019. Minor changes approved at 29th meeting of the Academy Council of CAS held on 3 September 2019, at 31st meeting on 29 October 2019, at 32nd meeting on 26 November 2019, at 33rd meeting on 14 January 2020, at 43rd voting per rollam on 31 March 2020, at 36th meeting on 2 June 2020, at 41st meeting on 24 November 2020, at 59th voting per rollam on 18 December 2020 and at 42nd meeting on 12 January 2021.

Evaluation of research and professional activity of research-oriented institutes of the Czech Academy of Sciences for the period 2015–2019

Annex 1 – Field-based classification

Classification of fields of science is in line with the structure approved by the Board of the Research, Development and Innovation Council on 27 August 2018¹. The structure is based on OECD Category to Web of Science Category Mapping 2012² converter which converts field-based classification of OECD to field-based classification pursuant to Web of Science (WOS).

The list includes **6 main fields** joining **42 fields** in total (Fields of Research and Development, FORD) arranged in accordance with Frascati Manual 2015 - Guidelines for Collecting and Reporting Data on Research and Experimental Development³ (Table 2.2), including closer disciplines, so called subfields (**detailed FORD**), belonging to the mentioned fields by content. For the purpose of evaluation, the fields are divided into 12 panels pursuant to their representation in the research activity of the institutes of the CAS with that:

- The field of 1.6 Biological Sciences is divided up to two independent panels (5 and 6).
- The Field group 4 (Agricultural and Veterinary Sciences) is attached to the Panel 6 (Biological Sciences).

Field-based classification in accordance with OECD and WOS is identical, except for several categories, which are added to the WOS.

Inclusion of teams: The institutes (as those who submit the evaluation applications) will be numbered, as will be the teams within the framework of the institute. In the application, the institute will include each of its research teams **into exactly one panel (basic panel)** and **into exactly one field (FORD) within the panel (basic field)**.

Inclusion of outputs and results:

- 1) Particular outputs submitted to assessment are implicitly intended to be included into a basic panel and basic field. Results whose field differs from the basic panel of the research team may be included into another field and panel.
- 2) The subfield must also be listed for each output or result (detailed FORD).

¹ Published at: <https://www.vyzkum.cz/FrontClanek.aspx?idsekce=799796> (in Czech only)

² Published at: <http://help.prod-incites.com/inCites2Live/filterValuesGroup/researchAreaSchema/oeCdCategoryScheme.html>

³ Published at: <http://www.oecd.org/publications/frascati-manual-2015-9789264239012-en.htm>

**Evaluation of research and professional activity
of research-oriented institutes of the Czech Academy of Sciences
for the period 2015–2019**

Names and numbers of panels and commissions in the list of fields

Main Fields	No. Panel/ Commission	Name Panel/ Commission	FIELDS OF RESEARCH AND DEVELOPMENT (FORD)	Code	DETAILED FORD (DFORD)	WOS Category				
1. Natural Sciences	1	Mathematics and computer sciences	1.1 Mathematics	10101	Pure mathematics	MATHEMATICS				
				10102	Applied mathematics	MATHEMATICS, APPLIED				
	10103	Statistics and probability		STATISTICS & PROBABILITY						
						LOGIC				
						MATHEMATICS, INTERDISCIPLINARY APPLICATIONS				
						PHYSICS, MATHEMATICAL				
				1.2 Computer and information sciences	10201	Computer sciences, information science, bioinformatics (hardware development to be 2.2, social aspect to be 5.8)	COMPUTER SCIENCE, ARTIFICIAL INTELLIGENCE			
			COMPUTER SCIENCE, INFORMATION SYSTEMS							
							COMPUTER SCIENCE, THEORY & METHODS			
							COMPUTER SCIENCE, SOFTWARE ENGINEERING			
							COMPUTER SCIENCE, CYBERNETICS			
							LOGIC			
							COMPUTER SCIENCE, INTERDISCIPLINARY APPLICATIONS			
		2	Physical sciences	1.3 Physical sciences	10301	Atomic, molecular and chemical physics (physics of atoms and molecules including collision, interaction with radiation, magnetic resonances, Mössbauer effect)	PHYSICS, ATOMIC, MOLECULAR & CHEMICAL			
									PHYSICS, CONDENSED MATTER	
										PHYSICS, PARTICLES & FIELDS
										PHYSICS, NUCLEAR
										PHYSICS, FLUIDS & PLASMAS
										OPTICS
										ACOUSTICS
										ASTRONOMY & ASTROPHYSICS
							PHYSICS, APPLIED			
							PHYSICS, MULTIDISCIPLINARY			
		3	Chemical sciences	1.4 Chemical sciences	10401	Organic chemistry	CHEMISTRY, ORGANIC			
									CHEMISTRY, INORGANIC & NUCLEAR	
									CHEMISTRY, PHYSICAL	
									POLYMER SCIENCE	
										ELECTROCHEMISTRY
										CHEMISTRY, ANALYTICAL
										CHEMISTRY, APPLIED
							CRYSTALLOGRAPHY			
							GREEN & SUSTAINABLE SCIENCE & TECHNOLOGY			
							CHEMISTRY, MULTIDISCIPLINARY			
		4	Earth and environmental sciences	1.5. Earth and related environmental sciences	10501	Hydrology				
									OCEANOGRAPHY	
									WATER RESOURCES	
									MINERALOGY	
									GEOLOGY	
									PALEONTOLOGY	
										GEOGRAPHY, PHYSICAL
										METEOROLOGY & ATMOSPHERIC SCIENCES
										ENVIRONMENTAL SCIENCES
							GEOCHEMISTRY & GEOPHYSICS			
							GREEN & SUSTAINABLE SCIENCE & TECHNOLOGY			
							GEOSCIENCES, MULTIDISCIPLINARY			
	5	Biological sciences A	1.6 Biological sciences	10601	Cell biology	CELL BIOLOGY				
								GENETICS & HEREDITY		
									REPRODUCTIVE BIOLOGY	
									DEVELOPMENTAL BIOLOGY	
									MICROBIOLOGY	
									VIROLOGY	
									BIOCHEMISTRY & MOLECULAR BIOLOGY	
									BIOCHEMICAL RESEARCH METHODS	
									BIOPHYSICS	
									BIOLOGY	
	6	Biological sciences B		10602	Biology (theoretical, mathematical, thermal, cryobiology, biological rhythm), Evolutionary biology	EVOLUTIONARY BIOLOGY				
							MATHEMATICAL & COMPUTATIONAL BIOLOGY			
								PLANT SCIENCES		
								MYCOLOGY		
								ZOOLOGY		
								ORNITHOLOGY		
								ENTOMOLOGY		
								MARINE & FRESHWATER BIOLOGY		
								LIMNOLOGY		
						ECOLOGY				
						BIODIVERSITY CONSERVATION				
			1.7 Other natural sciences			MULTIDISCIPLINARY SCIENCES				

Main Fields	No. Panel/ Commission	Name Panel/ Commission	FIELDS OF RESEARCH AND DEVELOPMENT (FORD)	Code	DETAILED FORD (DFORD)	WOS Category
2. Engineering and Technology	7	Engineering and technology	2.1 Civil engineering	20101	Civil engineering	ENGINEERING, CIVIL
				20102	Construction engineering, Municipal and structural engineering	CONSTRUCTION & BUILDING TECHNOLOGY
				20103	Architecture engineering	
				20104	Transport engineering	TRANSPORTATION SCIENCE & TECHNOLOGY
			2.2 Electrical engineering, Electronic engineering, Information engineering	20201	Electrical and electronic engineering	ENGINEERING, ELECTRICAL & ELECTRONIC
				20202	Communication engineering and systems	
				20203	Telecommunications	TELECOMMUNICATIONS
				20204	Robotics and automatic control	ROBOTICS
				20205	Automation and control systems	AUTOMATION & CONTROL SYSTEMS
				20206	Computer hardware and architecture	COMPUTER SCIENCE, HARDWARE & ARCHITECTURE
			2.3 Mechanical engineering	20301	Mechanical engineering	ENGINEERING, MECHANICAL
				20302	Applied mechanics	MECHANICS
				20303	Thermodynamics	THERMODYNAMICS
				20304	Aerospace engineering	ENGINEERING, AEROSPACE
				20305	Nuclear related engineering; (nuclear physics to be 1.3);	NUCLEAR SCIENCE & TECHNOLOGY
				20306	Audio engineering, reliability analysis	
			2.4 Chemical engineering	20401	Chemical engineering (plants, products)	ENGINEERING, CHEMICAL
				20402	Chemical process engineering	
			2.5 Materials engineering	20501	Materials engineering	METALLURGY & METALLURGICAL ENGINEERING
				20502	Paper and wood	MATERIALS SCIENCE, PAPER & WOOD
				20503	Textiles; including synthetic dyes, colours, fibres (nanoscale materials to be 2.10; biomaterials to be 2.9)	MATERIALS SCIENCE, TEXTILES
				20504	Ceramics	MATERIALS SCIENCE, CERAMICS
				20505	Composites (including laminates, reinforced plastics, cermets, combined natural and synthetic fibre fabrics; filled composites)	MATERIALS SCIENCE, COMPOSITES
				20506	Coating and films	MATERIALS SCIENCE, COATINGS & FILMS
						MATERIALS SCIENCE, CHARACTERIZATION & TESTING MATERIALS SCIENCE, MULTIDISCIPLINARY
			2.6 Medical engineering	20601	Medical engineering	MEDICAL LABORATORY TECHNOLOGY
				20602	Medical laboratory technology (including laboratory samples analysis; diagnostic technologies) (Biomaterials to be 2.9 [physical characteristics of living material as related to medical implants, devices, sensors])	CELL & TISSUE ENGINEERING ENGINEERING, BIOMEDICAL
			2.7 Environmental engineering	20701	Environmental and geological engineering, geotechnics	ENGINEERING, ENVIRONMENTAL ENGINEERING, GEOLOGICAL
				20702	Petroleum engineering (fuel, oils)	ENGINEERING, PETROLEUM
				20703	Mining and mineral processing	MINING & MINERAL PROCESSING
				20704	Energy and fuels	ENERGY & FUELS
				20705	Remote sensing	REMOTE SENSING
				20706	Marine engineering, sea vessels	ENGINEERING, MARINE
				20707	Ocean engineering	ENGINEERING, OCEAN
			2.8 Environmental biotechnology	20801	Environmental biotechnology	GREEN & SUSTAINABLE SCIENCE & TECHNOLOGY
				20802	Bioremediation, diagnostic biotechnologies (DNA chips and biosensing devices) in environmental management	BIOTECHNOLOGY & APPLIED MICROBIOLOGY
				20803	Environmental biotechnology related ethics	
			2.9 Industrial biotechnology	20901	Industrial biotechnology	
				20902	Bioprocessing technologies (industrial processes relying on biological agents to drive the process) biocatalysis, fermentation	
				20903	Bioproducts (products that are manufactured using biological material as feedstock) biomaterials, bioplastics, biofuels, bioderived bulk and fine chemicals, bio-derived novel materials	MATERIALS SCIENCE, BIOMATERIALS
			2.10 Nano-technology	21001	Nano-materials (production and properties)	NANOSCIENCE & NANOTECHNOLOGY
				21002	Nano-processes (applications on nano-scale); (biomaterials to be 2.9)	
			2.11 Other engineering and technologies	21101	Food and beverages	FOOD SCIENCE & TECHNOLOGY ENGINEERING, MULTIDISCIPLINARY ENGINEERING, INDUSTRIAL ENGINEERING, MANUFACTURING INSTRUMENTS & INSTRUMENTATION MICROSCOPY IMAGING SCIENCE & PHOTOGRAPHIC TECHNOLOGY SPECTROSCOPY

Main Fields	No. Panel/ Commission	Name Panel/ Commission	FIELDS OF RESEARCH AND DEVELOPMENT (FORD)	Code	DETAILED FORD (DFORD)	WOS Category
3. Medical and Health Sciences	8	Medical and health sciences	3.1 Basic medicine	30101	Human genetics	
				30102	Immunology	IMMUNOLOGY
				30103	Neurosciences (including psychophysiology)	NEUROSCIENCES
				30104	Pharmacology and pharmacy	PHARMACOLOGY & PHARMACY
				30105	Physiology (including cytology)	PHYSIOLOGY
				30106	Anatomy and morphology (plant science to be 1.6)	ANATOMY & MORPHOLOGY
				30107	Medicinal chemistry	CHEMISTRY, MEDICINAL
				30108	Toxicology	TOXICOLOGY
				30109	Pathology	PATHOLOGY
					PSYCHOLOGY, CLINICAL	
					MEDICINE, RESEARCH & EXPERIMENTAL	
			3.2 Clinical medicine	30201	Cardiac and Cardiovascular systems	CARDIAC & CARDIOVASCULAR SYSTEMS
				30202	Endocrinology and metabolism (including diabetes, hormones)	ENDOCRINOLOGY & METABOLISM
				30203	Respiratory systems	RESPIRATORY SYSTEM
				30204	Oncology	ONCOLOGY
				30205	Hematology	HEMATOLOGY
				30206	Otorhinolaryngology	OTORHINOLARYNGOLOGY
				30207	Ophthalmology	OPHTHALMOLOGY
				30208	Dentistry, oral surgery and medicine	DENTISTRY, ORAL SURGERY & MEDICINE
				30209	Paediatrics	PEDIATRICS
				30210	Clinical neurology	CLINICAL NEUROLOGY
				30211	Orthopaedics	ORTHOPEDICS
				30212	Surgery	SURGERY
				30213	Transplantation	TRANSPLANTATION
				30214	Obstetrics and gynaecology	OBSTETRICS & GYNECOLOGY
				30215	Psychiatry	PSYCHIATRY
				30216	Dermatology and venereal diseases	DERMATOLOGY
				30217	Urology and nephrology	UROLOGY & NEPHROLOGY
				30218	General and internal medicine	MEDICINE, GENERAL & INTERNAL
				30219	Gastroenterology and hepatology	GASTROENTEROLOGY & HEPATOLOGY
				30220	Andrology	ANDROLOGY
				30221	Critical care medicine and Emergency medicine	CRITICAL CARE MEDICINE EMERGENCY MEDICINE
				30223	Anaesthesiology	ANESTHESIOLOGY
				30224	Radiology, nuclear medicine and medical imaging	RADIOLOGY, NUCLEAR MEDICINE & MEDICAL IMAGING
			30225	Allergy	ALLERGY	
			30226	Rheumatology	RHEUMATOLOGY	
			30227	Geriatrics and gerontology	GERIATRICS & GERONTOLOGY GERONTOLOGY	
			30229	Integrative and complementary medicine (alternative practice systems)	INTEGRATIVE & COMPLEMENTARY MEDICINE	
			30230	Other clinical medicine subjects	NEUROIMAGING AUDIOLOGY & SPEECH-LANGUAGE PATHOLOGY PERIPHERAL VASCULAR DISEASE	
			3.3 Health sciences	30301	Social biomedical sciences (includes family planning, sexual health, psycho-oncology, political and social effects of biomedical research)	SOCIAL SCIENCES, BIOMEDICAL
				30302	Epidemiology	
				30303	Infectious Diseases	INFECTIOUS DISEASES
				30304	Public and environmental health	PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH
				30305	Occupational health	PUBLIC, ENVIRONMENTAL & OCCUPATIONAL HEALTH
				30306	Sport and fitness sciences	SPORT SCIENCES
				30307	Nursing	NURSING
				30308	Nutrition, Dietetics	NUTRITION & DIETETICS
				30309	Tropical medicine	TROPICAL MEDICINE
				30310	Parasitology	PARASITOLOGY
				30311	Medical ethics	MEDICAL ETHICS
				30312	Substance abuse	SUBSTANCE ABUSE
					HEALTH CARE SCIENCES & SERVICES HEALTH POLICY & SERVICES MEDICINE, LEGAL MEDICAL INFORMATICS PRIMARY HEALTH CARE PSYCHOLOGY, PSYCHOANALYSIS REHABILITATION	
3.4 Medical biotechnology	30401	Health-related biotechnology				
	30402	Technologies involving the manipulation of cells, tissues, organs or the whole organism (assisted reproduction)				
	30403	Technologies involving identifying the functioning of DNA, proteins and enzymes and how they influence the onset of disease and maintenance of well-being (gene-based diagnostics and therapeutic interventions (pharmacogenomics, gene-based therapeutics))				
	30404	Biomaterials (as related to medical implants, devices, sensors)				
	30405	Medical biotechnology related ethics				
3.5 Other medical sciences	30501	Forensic science				
	30502	Other medical science				

Main Fields	No. Panel/ Commission	Name Panel/ Commission	FIELDS OF RESEARCH AND DEVELOPMENT (FORD)	Code	DETAILED FORD (DFORD)	WOS Category
4. Agricultural and veterinary sciences	6	Biological sciences B	4.1 Agriculture, Forestry, and Fisheries	40101	Agriculture	AGRICULTURE, MULTIDISCIPLINARY
				40102	Forestry	FORESTRY
				40103	Fishery	FISHERIES
				40104	Soil science	SOIL SCIENCE
				40105	Horticulture, viticulture	HORTICULTURE
				40106	Agronomy, plant breeding and plant protection; (Agricultural biotechnology to be 4.4)	AGRONOMY
			4.2 Animal and Dairy science	40201	Animal and dairy science; (Animal biotechnology to be 4.4)	AGRICULTURE, DAIRY & ANIMAL SCIENCE
				40202	Pets	
				40203	Husbandry	
			4.3 Veterinary science	40301	Veterinary science	VETERINARY SCIENCES
			4.4 Agricultural biotechnology	40401	Agricultural biotechnology and food biotechnology	
				40402	GM technology (crops and livestock), livestock cloning, marker assisted selection, diagnostics (DNA chips and biosensing devices for the early/accurate detection of diseases) biomass feedstock production technologies, biopharming	
				40403	Agricultural biotechnology related ethics	
			4.5 Other agricultural sciences			FOOD SCIENCE & TECHNOLOGY
						AGRICULTURAL ECONOMICS & POLICY
						AGRICULTURAL ENGINEERING
			5. Social Sciences	9	Social sciences	5.1 Psychology and cognitive sciences
50102	Psychology, special (including therapy for learning, speech, hearing, visual and other physical and mental disabilities);	PSYCHOLOGY, APPLIED				
50103	Cognitive sciences	BEHAVIORAL SCIENCES				
		PSYCHOLOGY, MATHEMATICAL				
		PSYCHOLOGY, EXPERIMENTAL				
		PSYCHOLOGY, SOCIAL				
		PSYCHOLOGY, DEVELOPMENTAL				
		PSYCHOLOGY, BIOLOGICAL				
		PSYCHOLOGY, APPLIED				
		PSYCHOLOGY, EDUCATIONAL				
		ERGONOMICS				
		PSYCHOLOGY, MULTIDISCIPLINARY				
5.2 Economics and Business	50201	Economic Theory				ECONOMICS
	50202	Applied Economics, Econometrics				ECONOMICS
	50203	Industrial relations				INDUSTRIAL RELATIONS & LABOR
	50204	Business and management				BUSINESS MANAGEMENT
	50205	Accounting				
	50206	Finance				BUSINESS, FINANCE
5.3 Education	50301	Education, general; including training, pedagogy, didactics [and education systems]				EDUCATION, SCIENTIFIC DISCIPLINES
	50302	Education, special (to gifted persons, those with learning disabilities)				EDUCATION, SPECIAL
5.4 Sociology	50401	Sociology				EDUCATION & EDUCATIONAL RESEARCH
	50402	Demography				SOCIOLOGY
	50403	Social topics (Women's and gender studies; Social issues; Family studies; Social work)				SOCIAL SCIENCES, MATHEMATICAL METHODS HISTORY OF SOCIAL SCIENCES
	50404	Anthropology, ethnology				DEMOGRAPHY
						WOMEN'S STUDIES FAMILY STUDIES SOCIAL ISSUES SOCIAL WORK
5.5 Law	50501	Law				ANTHROPOLOGY ETHNIC STUDIES
	50502	Criminology, penology				LAW
5.6 Political science	50601	Political science				CRIMINOLOGY & PENOLOGY
	50602	Public administration				POLITICAL SCIENCE
	50603	Organisation theory				INTERNATIONAL RELATIONS PUBLIC ADMINISTRATION
5.7 Social and economic geography	50701	Cultural and economic geography				GEOGRAPHY
	50702	Urban studies (planning and development)				AREA STUDIES URBAN STUDIES PLANNING & DEVELOPMENT
	50703	Transport planning and social aspects of transport (transport engineering to be 2.1)				TRANSPORTATION
	50704	Environmental sciences (social aspects)				ENVIRONMENTAL STUDIES
5.8 Media and communications	50801	Journalism				
	50802	Media and socio-cultural communication				COMMUNICATION
	50803	Information science (social aspects)				
	50804	Library science				INFORMATION SCIENCE & LIBRARY SCIENCE
5.9 Other social sciences	50901	Other social sciences				HOSPITALITY, LEISURE, SPORT & TOURISM CULTURAL STUDIES
						SOCIAL SCIENCES, INTERDISCIPLINARY
	50902	Social sciences, interdisciplinary				ASIAN STUDIES

Main Fields	No. Panel/ Commission	Name Panel/ Commission	FIELDS OF RESEARCH AND DEVELOPMENT (FORD)	Code	DETAILED FORD (DFORD)	WOS Category
6. Humanities and the Arts	10	History and archaeology	6.1 History and Archaeology	60101	History (history of science and technology to be 6.3, history of specific sciences to be under the respective headings)	HISTORY MEDIEVAL & RENAISSANCE STUDIES
				60102	Archaeology	ARCHAEOLOGY
				60201	General language studies	LANGUAGE & LINGUISTICS
	11	Languages and literature	6.2 Languages and Literature	60202	Specific languages	CLASSICS
				60203	Linguistics	LINGUISTICS
				60204	General literature studies	LITERATURE
				60205	Literary theory	LITERARY THEORY & CRITICISM LITERARY REVIEWS
				60206	Specific literatures	LITERATURE, AFRICAN, AUSTRALIAN, CANADIAN
						LITERATURE, AMERICAN
						LITERATURE, BRITISH ISLES
						LITERATURE, GERMAN, DUTCH, SCANDINAVIAN
						LITERATURE, ROMANCE
						LITERATURE, SLAVIC
			POETRY			
	12	Humanities and the arts	6.3 Philosophy, Ethics and Religion	60301	Philosophy, History and Philosophy of science and technology	HISTORY & PHILOSOPHY OF SCIENCE PHILOSOPHY HISTORY OF SOCIAL SCIENCES
				60302	Ethics (except ethics related to specific subfields)	ETHICS
				60303	Theology	RELIGION
				60304	Religious studies	RELIGION
			6.4 Arts (arts, history of arts, performing arts, music)	60401	Arts, Art history	ART
				60402	Architectural design	ARCHITECTURE
				60403	Performing arts studies (Musicology, Theater science, Dramaturgy)	THEATRE
						DANCE
				60404	Folklore studies	MUSIC FOLKLORE
60405			Studies on Film, Radio and Television	FILM, RADIO, TELEVISION		
6.5 Other Humanities and the Arts			HUMANITIES, MULTIDISCIPLINARY			

Note: If the code on the DETAILED FORD level does not match, the 5-character FORD code will be used (for example for FORD 2.11 = 21100).

Evaluation of research and professional activity of research-oriented institutes of the Czech Academy of Sciences for the period 2015–2019

Annex 2 – Bibliometrics

1. Introduction

Evaluation of institutes of the CAS is based on international field-based informed peer review, i.e. background documents which may provide necessary information on the quality of the outputs as well as the overall information on teams and institutes in both Phase I and Phase II will be enclosed to the evaluation. The background documents include basic information on outputs, bibliometric data in tables or charts and other indications on structure and activities of the teams and institutes. The significance of bibliometrics in social sciences, humanities and technical sciences is very limited and for that reason bibliometrics will not be elaborated in these cases (in case of social sciences and humanities list of reviews and responses may be a part of the background documents). As for the bibliometrics, in Phase I, table with detailed information on each output evaluated will be made available to the evaluators including bibliometric data acquired by comparison in international level; in Phase II these data will be completed with bibliometrics of all teams' outputs in the period of evaluation thus even those which were not submitted to evaluation in the Phase I. The analysis of the outputs will be available to the commissions for Phase II; to make their work easier aggregated summaries will be available, which will make e.g. teams comparison within the fields or institutes of the CAS possible. It is necessary to point out, and the evaluators will be informed about this, that all bibliometric background data are intended only as a set of complementary information which will be used by the evaluator, panel or commission upon its discretion. Bibliometric tables will be made available in advance to a particular institute so that it is able to check them.

2. Bibliometrics of Phase I of CAS evaluation

The basis for evaluation will be prepared by every evaluated team in a form of an adjusted table generated from ASEP, where outputs will be marked (publications, books, patents, etc.) which is submitted to evaluation in Phase I (see "Methodology of Evaluation of research and professional activity of research-oriented institutes of the CAS for period 2015–2019"). Based on these tables the institutes compile the final set of outputs which are submitted to the evaluation in Phase I. Background documents of all CAS will be compiled in comprehensive table – see Evaluation of the Czech Academy of Sciences (2015–2019). The core of the item is explained under the LEGEND bookmark. The table heading contains the name of the institute, number of teams and workers evaluated. Number of citations and citation analysis are elaborated only in results for 2015–2017.

- 2.1. The 1st column indicates serial number of team within the institute.
- 2.2. 2nd column indicates team's ID.
- 2.3. Column 3 contains name and surname of a team member listed in the output.
- 2.4. Column 4 contains information about collaboration type. Outputs created exclusively in a particular institute are marked by A, outputs created within national cooperation by max. 5 organizations are marked by B, outputs created within international cooperation by max. 5 organizations are marked C, outputs created within large collaboration exceeding 5 organizations are marked D, outputs created within large

international collaboration are marked E. In reasonable fields (all fields except social sciences and humanities and further except for mathematics and informatics) it is distinguished whether the output has/does not have corresponding author² from particular institute (team) which is distinguished by marking A1/A, B1/B, C1/C and D1/D.

- 2.5. Column 5 gives the name of the output.
- 2.6. Column 6 gives full name of the source (journal) which must be in line with names of sources in WoS.
- 2.7. Column 7 gives the subfield (Subject Category in accordance with JCR) of the particular output, which is specified by the author but as one of categories listed at WoS of this output.
- 2.8. Column 8 gives the type of the output (article, review, proceedings paper, book, patent, software ...).
- 2.9. Column 9 gives the year of publication of the output.
- 2.10. Column 10 specifies the number assigned to the output at WoS, so called accession number (UT). This is a unique number identifying the outputs located at WoS which will serve to further bibliometric analysis (located to the right of UT).
- 2.11. Columns 11 and 12 give information about quality of the journal - quartile number which the journal is situated in within the particular field of WoS in accordance to AIS. If the journal is in the top decile (among 10 per cent of journals with top values of AIS), there is an asterisk at the number one; if there is no assigned AIS value of the journal, there is "n.a." in the corresponding line. The AIS values will be downloaded from the JCR database with certain advance before the evaluation of particular fields and the value of quartiles and the top decile of particular journals will be calculated. The calculation is similar to the one which was made in the previous evaluation and its procedure is in line with the one used by the Office of the Government within the national evaluation.
 - The journals are ranked in each field in a table by AIS values; each indicates also number of pieces of work (N_i) published yearly. Next, a scale from zero to M is made, where M is the total number of outputs published yearly in a field $M = \sum N_i$. (the counting is made through all journals, i.e. from $i=1$ up to the total number of the journals within the field). The scale is made by putting abscissae of N_i length together to produce the total length M with the journal with the top AIS ($i=1$) up to the last journal. Centres of the abscissae represent the location of the journal in the scale. When the scale is divided in fourths, division of the journals in quartiles is got; journals of the top decile are identified in a similar way.
 - The subfield is given by WoS categorization and it was chosen with regard to some institutes where use of fields pursuant to OECD would lead to systematic lowering or increase of indicators (journals of particular institute are all located low or high within the field). The reason for this is the fact that the journals of the sub fields are not distributed randomly within the field but may be systematically cumulated at the bottom or at the top. In such cases it is more suitable to use values of identifiers calculated by lower granularity (i.e. subfields).

- If a journal is classified into more fields, the average of particular quartiles is calculated and rounded; procedure of calculating the top decile is the same. Journals with shortened names are assigned with their full names; no special symbols („&” or „-„) shall not be used in the names of the journals; these symbols shall be replaced with blank characters (in line with convention used by WoS). The same format of the names must be used in column 6 of the table.
- 2.12. Column 13 gives the number of citations – this value is taken from WoS as of the date of the analysis pursuant to UT.
- 2.13. Evaluation of number of citations is in column 14, quartile which the output is ranked in pursuant to number of citations as of the date of the analysis is indicated here. A list arranged by number of publications, divided in quartiles is made for particular year of publication, field and type of publication. Quartile of the output is identified by the number of its citations. There is an asterisk at 1 in case of extraordinary highly cited outputs in the top decile
- Critic values of number of citations in particular quartiles and in the top decile of particular field will be downloaded from WoS (Advanced Search – field, year and type of publication is entered, serial numbers dividing quartiles are identified in the list arranged by the number of citations and numbers of citations are found here (it is similar in case of decile). Quartile (decile) is assigned to the number of citations from column 13 (TC - Times cited) based on the downloaded table.

Evaluation of the Czech Academy of Sciences (2015–2019)

#33 BFU Institute of Biophysics 10 teams / 92 scientists										JOURNAL QUARTILES		CITATIONS	
Team	ID	AUTHOR	COLLABORATION	TITLE	SOURCE	SUBJECT CATEGORIES	TYPE	YEAR	UT	AIS	SJR	TC	Quartile
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	23	NOVAK, Jiri	A1	Mechanisms of protective immunity against MHC class 1-positive and MHC class 1-deficient HPV 16-associated tumours	EXPERIMENTAL HEMATOLOGY	HEMATOLOGY; MEDICINE, RESEARCH & EXPERIMENTAL	ARTICLE	2015	WOS:000330812700048	1	1*	54	1*
1	23	NOVAK, Jiri	B	The current perspective on tick-borne encephalitis awareness and prevention	JOURNAL OF MOLECULAR MEDICINE	CELL & TISSUE ENGINEERING; BIOTECHNOLOGY & APPLIED MICROBIOLOGY	ARTICLE	2016	WOS:000330610300007	2	2	n.a.	n.a.
1	23	NOVAK, Jiri	C	Diagnosis of Niemann-Pick type C (NPC) - Decisions at the cell level. Pathologist's report	JOURNAL OF TRANSLATIONAL MEDICINE	MEDICINE, RESEARCH & EXPERIMENTAL	ARTICLE	2017	WOS:000330570000107	1	1	15	2
1	23	NOVAK, Jiri	D	Perpetum mobile	CZECH PATENT OFFICE	n.a.	PATENT	2017	-	-	-	-	-
1	23	POKL, Pavel	C	Determination of metallothioneins and alpha-methylacyl-CoA racemase in patients with prostate carcinoma	BOSNIAN JOURNAL OF BASIC MEDICAL SCIENCES	MEDICINE, RESEARCH & EXPERIMENTAL	ARTICLE	2018	n.a.	n.a.	3	3	n.a.
1	23	POKL, Pavel	B1	Factors Associated with Multidrug-resistant Tuberculosis: Comparison of Patients Born Inside and Outside of the Czech Republic	BIOMEDICAL PAPERS-OLOMOUC	MEDICINE, RESEARCH & EXPERIMENTAL	REVIEW	2015	WOS:000329539900012	3	2	16	2

Team	ID	AUTHOR	COLLABORATION	TITLE	SOURCE	SUBJECT CATEGORIES	TYPE	YEAR	UT	AIS	SJR	TC	Quartile
1	23	POKL, Pavel	A1	Defining the critical hurdles in cancer immunotherapy	Palgrave		BOOK	2019	WOS:000329539900020	-	-		-
2	14	KLESL, Felix	A1	Basal and induced granulopoiesis in outbred, F-1 hybrid and inbred mice: can inbreeding depression influence the experimental practice?	JOURNAL OF EXPERIMENTAL MEDICINE	MEDICINE, RESEARCH & EXPERIMENTAL	ARTICLE	2017	WOS:000328658600023	1*	1*	34	2
2	14	KLESL, Felix	B	Cellular lipid alterations during the colon adenoma-carcinoma sequence and the sensitivity to dietary fatty acids	INTERNATIONAL JOURNAL OF MOLECULAR MEDICINE	MEDICINE, RESEARCH & EXPERIMENTAL	ARTICLE	2016	WOS:000330339700014	2	2	29	2
2	14	KLESL, Felix	E	Clinical Aspects of Sepsis	SEPSIS	MEDICINE, SEARCH & EXPERIMENTAL	ARTICLE	2015	WOS:000328326800012	4	4	2	3 - 4
2	14	KLESL, Felix	A1	Square root calculator	n.a.		SOFTWARE	2018	-	-	-		-

3. Bibliometrics of Phase II of CAS evaluation

In Phase I quality of selected most important outputs of particular teams and institutes (hereinafter referred to as "Evaluated") will be evaluated in a form of peer-review. Quality Profile of outputs of each team will be the result. These profiles will be significant information in Phase II of the evaluation. Bibliometric information providing a list of all outputs of the teams in the evaluated period listed at WoS (Core Collection) will be another background data; not only the one submitted to evaluation in Phase I.

As the source information is extremely extensive, commission of Phase II will receive the information duly, systematically and well visually arranged in an aggregated form of graphs and tables (see description below). Detailed data in a form of table which contains all outputs of the period evaluated will be possible to search out in case of need.

3.1 Aggregated data on team level

- 3.1. **Header:** It contains identification of a institute and team, total number of outputs, number of evaluated outputs in Phase I (indicated as "Evaluated Outputs"), research field pursuant to OECD classification and a recalculated number of workers (FTE).
- 3.2. **Results of Phase I Evaluation:** The results are in the Quality Groups of Outputs table and in the Quality Profile graph. Numbers of outputs in particular qualitative levels are given here. Regarding the fact the within Phase II of the evaluation the teams will always be evaluated by field-based commissions within its particular field, a rate between number of outputs and number of team members (FTE) is given as an auxiliary indicator. The scientific productivity of a team will however be assessed by the commission which will consider, besides the bibliometrics, also the field's particularities, team's background, time of existence and other aspects.
- 3.3. The **Quality of Outputs by Journals** graph contains bibliometric analysis of all outputs of the team in the evaluated period and shows the quality of journals which the team published in. Number of outputs in journals in the top decile (1*) and in particular quartiles are indicated¹. In fields where it is reasonable², these data are indicated both for A1, B1, C1, and D1 (in red) output types and for other outputs of the particular team indicated in ASEP (in green). The summary of all outputs is then represented by the total height of the column and it may be calculated by simple counting up of numbers in the upper part of the column. Thus the graph provides with both the performance (number of outputs) and focus of the outputs towards the prestige (number of citations) of the journals and the difference between the outputs with corresponding home author or without the author.
- 3.4. The **Quality of Outputs by Intensity of Citations** graph contains bibliometric analysis of all outputs of the team in the evaluated period and shows the quality of journals which the team published in. Again, these are absolute numbers of outputs

¹ Evaluated based on magazine AIS in particular fields of WoS (average value of quartile through WoS fields was calculated and rounded to an integer in case of journals in several fields). The journals of the highest quality (assessed based on AIS) are on the left (1* represents the 1st decile, i.e. the journal is in the top 10 per cent of journals arranged by AIS).

² Affiliation of the corresponding author is significant at about 80 per cent of the outputs submitted in Phase I of the evaluation. These are all fields except for social sciences and humanities, and mathematics and informatics. In case of more affiliations of corresponding authors, the affiliation will be credited to the team (institute) if it is mentioned at least once.

shown in most of fields, specially for outputs of A1, B1, C1, and D1 types (in red) and others (in blue). Again, the top decile is indicated (1*) as well as particular quartiles³. The indications show how many outputs were cited above-average and how many below-average compared to the outputs of the same type, year of publication in the same field of WoS⁴. The citation analysis is made only for outputs in period of 2015-2017 since the citations of outputs of last two years may be encumbered with significant disturbance.

- 3.5. The **Quality Groups and Type of Collaboration** table indicates number of outputs in particular qualitative levels further split up by the type of collaboration at output (only division to A, B, C, D, E) will be used in some fields). The table is intended as a support at assessment of the teams' role and their contribution to the best outputs. Commission should compare these indications with the reason for classification of the output in Phase I of the evaluation and with the description of the contribution of the team to the creation of the output.
- 3.6. The **Field Structure of Outputs** table indicates the number of outputs divided by WoS fields. This information is important for identification of the fields which the team predominantly publishes in. It allows identifying teams with similar (and different) focus by means of subfields, which results in suitability (unsuitability) of comparing the teams.

³ Quartiles from the list of outputs arranged by the number of citations are identified for particular field of WoS, year and type. Quartiles 3 and 4 are put together because the number of citations is very small (on the contrary, number of outputs in this category may be significant).

⁴ The analysis was performed in a procedure indicated in description of column 14 of the aggregate table of Phase I of the evaluation.

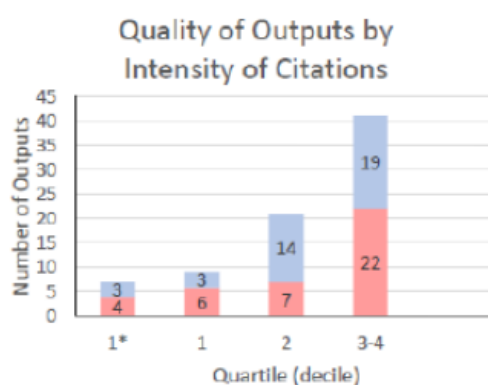
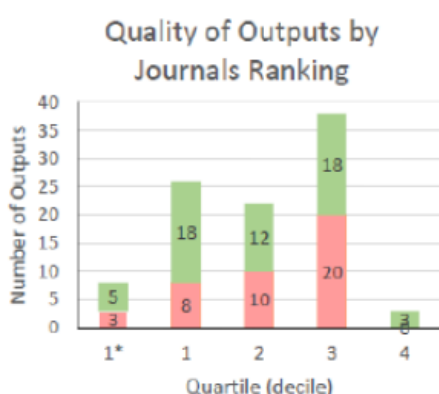
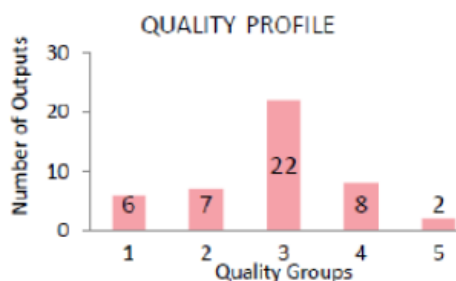
RESULTS OF THE I. STAGE OF EVALUATION AND BIBLIOMETRIC PARAMETERS

INSTITUTE: Institute of Mathematics CAS	TEAM: 1	HEAD: Jaroslav Novák
TOTAL NUMBER OF OUTPUTS: 24	EVALUATED OUTPUTS: 14	FIELD: CHEMISTRY FTE: 4,5

QUALITY GROUPS OF OUTPUTS

QUALITY	1	2	3	4	5
OUTPUTS, N	5	6	3	0	0
N/FTE	1,1	1,3	0,7	0	0

Average value: $N_{av}=1,86$ $N_{av}/FTE=0,41$



Quality Groups and Type of Collaboration

Collaboration	1	2	3	4	5
A		2	2		
B		1	1		
B1	2	1			
C	2				
C1	1	2			
D					
D1					
E					
A1+B1+C1+D1	3	5			
B+C+D+E	2	1	1		

Field Structure of Outputs

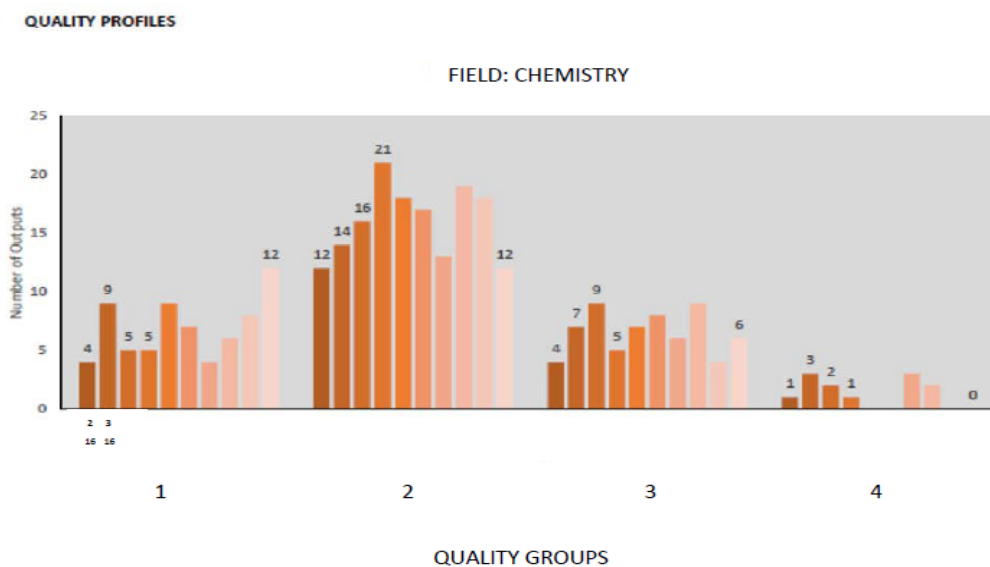
Field Structure of Outputs	Outputs (Evaluated)	Outputs (not Evaluated)	Average number of co-authors
Electrochemistry	4	6	7
Biochem. Mol. Biol.	8	15	10
Mol. Oncology	4	7	6
Chem. Analytical	15	21	5
Chem. Physical	4	3	6

3.2 Aggregated data on institute level

The above described information about particular teams will be also shown in aggregate for each of all the field (each commission will get comparison of teams in particular fields for each institute depending on its focus). The teams will be compared based on the results of Phase I of the evaluation and only within its fields; the commission however in Phase II of the evaluation has to take into account other circumstances, as e.g. the nature of the research, duration of the team, its background, etc. An information like that may be read from the bibliometric data only partly. The commissions will get more information from the background data for Phase II of the evaluation and from the visit.

The commissions will have available aggregate histogram summarizing information taken from the quality profiles of the team sheets. An independent variable will be Quality Group, QG

qualitative grade. The field will be indicated in the upper part of the graph. Team numbers (serial numbers of institutes and IDs of teams within the institute) will be indicated at the bottom, in the footing of the bar charts to make the orientation easier. Total number of outputs will be above the bars. Here will be the statistics of all the field. Further, there will be subfields range indicated (number of teams with the highest number of outputs in particular fields).



STATISTICS (I. PHASE, FIELD: CHEMISTRY)

Evaluated teams	45
FTE of all teams (FTE _{ALL})	325
Evaluated Outputs	736
Outputs per team	16,3 +- 5,6
Outputs per FTE	2,25 +- 1,5

WoS Categories in CHEMISTRY

WoS Category	Teams	Outputs
Chemistry, Physical	12	135
Chemistry, Analytical	6	85
Chemistry, Organic	3	30

Evaluation of research and professional activity of research-oriented institutes of the Czech Academy of Sciences for the period 2015–2019

Annex 3 – Conflict of interest

In order to ensure that the principles of the Evaluation of the research and professional activity of the research-oriented institutes of the Czech Academy of Sciences for the period 2015–2019 (hereinafter referred to as “Evaluation”) are adhered to and in compliance with the [Code of Ethics of the Researchers of the Czech Academy of Sciences](#), we set below the basic arrangements for definition and avoidance of potential conflicts of interest.

All Panel/Commission Chairs, Deputy Chairs and Members, Evaluators (hereinafter referred to as “Experts”) will be asked to make a declaration of their potential conflict of interest to the assigned outputs, results, research institutes, and research teams through the online information system.

Experts will be required to manage situations of potential conflict of interest. Should any conflict of interest or serious misconduct arise during Evaluation, Experts are obliged to bring the matter to the attention of the Coordination Board as soon as they become aware of it.

A conflict of interest exists if an Expert:

- (a) was involved in the preparation and/or is a co-author of the output and/or result to be evaluated,
- (b) has close family ties (spouse, partner, child, sibling, parent, etc.) or other close personal relationship with a co-author of the output and/or result to be evaluated; or with a person who is from the research team to be evaluated; or with any person representing institute to be evaluated,
- (c) is in any way involved in the management of any institute to be evaluated,
- (d) is employed or in any way contracted by any institute to be evaluated (also includes membership in the International Advisory Boards, Boards of the Institutes, Supervisory Boards, etc.),
- (e) has or has had a relationship of scientific rivalry or professional hostility with any co-author of the output and/or result to be evaluated, or with any member of the research team to be evaluated,
- (f) has or has had in the past a mentor/mentee relationship with any co-author of the output and/or result to be evaluated who is from the research team to be evaluated, or with any person from the institute or research team to be evaluated,
- (g) has a significant amount of articles in the journal published by Instituted to be evaluated with the exception of a journal that is internationally recognized in its field (e.g. Czech language studies) and has an irreplaceable role.

Coordination Board, upon notification from the Expert, will decide whether a conflict of interest exists if any other situation (e.g. joint projects) appears that could cast doubt on the Expert’s

ability to participate in the evaluation impartially, or that could reasonably appear to do so in the eyes of an external third party.

If it is revealed during an Evaluation that an Expert has knowingly concealed a conflict of interest, the Expert will be immediately excluded. Any Panel/Commission decision in which s/he has participated will be declared null and the output(s) and/or result(s) concerned will be re-evaluated.

Evaluation of research and professional activity of research-oriented institutes of the Czech Academy of Sciences for the period 2015–2019

Annex 8 – Societal relevance of outputs and activities

The evaluation in both phases includes two aspects: contribution to the knowledge and societal relevance. In Phase I, both of these criteria are projected in the evaluation scale (all levels of outputs evaluation), in Phase II, both of these aspects represent the main criteria of evaluation of teams and institutes.

Societal relevance in Phase I of the CAS evaluation

Outputs of all categories are included in Phase I of the evaluation: an article in journal, monograph, conference proceedings, patent, utility and industrial model, prototype, functional specimen, certified methodology, software, verified technology but also other results which are considered evaluation relevant by the entity evaluated.

As it was mentioned above, the evaluation scale in Phase I consists of two criteria in each level: contribution to the knowledge and societal relevance in the broadest sense. The criteria were consolidated in one scale because the results, which may be evaluated high from the point of the scientific excellence (contribution to the knowledge) may also be of significant societal relevance which is not rare and vice versa; at the same time, all possible combinations of the (high or low) scientific excellence and of the (high or low) societal relevance are possible. The aim of the evaluation is to choose the criterion with higher value and to assign it a corresponding grade.

The usefulness for society is an idea in the broadest sense, i.e. it includes also non-commercial usefulness. Research supporting competitiveness of the private sector is the subset of the research, which is useful to the society. The societal relevance of the outputs in Phase I of the evaluation is thus to be evaluated depending on its application potential, i.e. potential of the output to be used by the society. The output should be then able to prove its societal relevance. We evaluate neither commercial success nor return of investment. Evaluation of societal usefulness by commercial success (return of investment) would inevitably lead to preferences of results which are not the research but its following use in a form of technical or laboratory development. The act of use in practice itself does not usually give direction of the most progressive research. The evaluation period is five years but it is obvious that the use of the result in practice may be, and usually also is, in (far) longer time. If the result was used as early as within this period, it is premature to assess the degree and permanence of the societal impact.

In social sciences and humanities the contribution aiming at setting standards used by public administration, legislative, societal and cultural practice of the society is essential, which contributes to knowledgeable care for natural and historical environment as well as to forming of national identity and its reasonable integration into the international context.

We perform the evaluation in Phase I on peer-review principle because we consider the personal assessment of the experts in the field the most suitable for identifying of the societal relevance of the output.

Societal relevance in Phase II of the CAS evaluation

The societal relevance is one of the main criteria of teams and institutes evaluation and it includes the following aspects:

- collaborative research projects (research in effective collaboration) and research based on assignment with companies or application partners in general (the impact is not evaluated since that is the task of the application partner);
- "strategic partnership", which means a long-term collaboration of a company (an application partner in a broader sense) with a research institution. This may be proved by the history of the collaboration, repeated projects of the collaborative research and/or by research based on assignment. It means that trust and good collaboration was established between the partners and that the partner is interested in repeated and long-term collaboration,
- knowledge and technology transfer mechanism on the level of the team and of all the institution (whether the systematic attention is paid to the application potential as well as to the fact whether intellectual property is dealt with properly),
- in case of humanities and social sciences it includes the positive impact on economic, legislative, societal and cultural consequences of public policies, sustainability of the society development, topics of cultural understanding and forming of public attitudes and values.

Evaluation in Phase II at team level

The procedures and mechanisms of collaboration with application sphere and knowledge transfer at team level are provable by the extent of the collaboration research (number of projects), demonstrable establishment of strategic partnerships and working mechanisms of knowledge and technology transfer. In both cases it means the ability of the team to identify the application potential of the research results and to decide how the result will be optimally used in the institution.

In case of teams in humanities and social sciences, their publication activity, which participates in forming of public opinion of the Czech society and its ability to reflect adequately current societal and cultural issues, is important.

Evaluation in Phase II at institution level

Working system of knowledge and technology transfer is assessed at the institution level. Its form strongly depends on the field which is why the field commissions assess this system in accordance with their field practices. As for the knowledge and technology transfer not only commercialization of the research is included by far, but also the care for the use of the research results in practice in the broadest sense, including non-commercial use, use in forms like "open source", activities supporting public administration, environment protection etc.

Knowledge and technology transfer mechanisms at the institution level should identify research results application potential identification, records of these results, due care of the intellectual property protection and communication with application partners.

In the area of humanities and social sciences the contribution to publication or publishing activities is being assessed for the purpose of evaluation of economic, legislative, societal and cultural consequences of public policies as well as provable cooperation with national public administration, legislative, educational and cultural institutions.

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Annex 9 – Final reports

Final reports elaborated by particular field panels and commissions are the outcome of evaluation in each phase. The outcome of the overall evaluation are final reports of Phase II.

Phase I

The structure of the final report of Phase I is as follows:

Part A: **Qualitative profiles for individual teams**

Part B: Overview of **field-based outputs**

Example of the qualitative profile is listed in Annex 2 – Bibliometrics.

Phase II

The structure of the final report of Phase II is as follows:

Basic information about the institute and its teams

Part A: **Evaluation of the institute as a whole** – outcome of Phase II of the evaluation

- Evaluation of the institute in a form of SWOT analysis
- Evaluation based on criteria
- Other statements of the commission

Part B: **Evaluation of individual teams** – outcome of Stage II of the evaluation

- Evaluation of the teams in the form of SWOT analysis
- Evaluation based on criteria
- Other statements of the commission

Annex 1: Statement of the CAS observer about the Phase II of the evaluation

Annex 2: Statement of the director about the Phase II of the evaluation

The following code list of evaluation criteria and topics will be used for elaboration of the final report:

	Criterion	Topic	Area no.
MAIN CRITERIA	1. Quality of results		
		Quality of selected outputs of Phase I	H1.1
		Contribution of workers on the outputs reached	H1.2
		Quality of all outputs and results	H1.3
		The most valuable discoveries and findings in the fields, their importance for the field	H1.4
		Contribution of the participation of the authors in large collaborations (form of contribution, quality of output)	H1.5
	2. Societal relevance		
		Societal relevance of outputs and results pursuant to CAS and institute mission	H2.1
		System functionality for knowledge transfer into practise (licensing, infrastructure accessibility, expert knowledge), its usefulness for society. The impact of the institute's activity on proper practice in society (in legislative, social, cultural) in the area of social sciences and humanities	H2.2
		Relation to practice	H2.3
	Participation in AV21 strategy	H2.4	
	Cooperation with regions of the Czech Republic	H2.5	
FURTHER CRITERIA	1. Position in international and national context		
		Comparison of the teams and the institute with similar international and national institutes	D1.1
		Scope and quality of international and national cooperation and the role of the institute in such cooperation; engagement in broad international cooperation	D1.2
		Participation of the workers in scientific community activities (organizing of conferences and workshops, invited lectures, awards).	D1.3

	2. Vitality, sustainability and strategy		
		Direction in line with the perspective of the planned research directions	D2.1
		Assessment of the previous research objectives and their achievement	D2.2
		Assessment of implementation of recommendations from past evaluation	D2.3
		Success in receiving grants	D2.4
		Adequacy of instrumental equipment	D2.5
		Effectiveness of management (organizational structure, planning, directing, controlling, support units)	D2.6
		Assessment of professional structure, development strategy and the strategy of keeping best scientists, age structure, career and qualification growth (number of foreign workers and their recruitment strategy, number of DSc. degrees gained, support to acquiring of scientists and providing background for committees assessing DSc. dissertations, etc.)	D2.7
		Creating work-life balance conditions, assessment of approach towards possible gender issues	D2.8
		Relation of the institute with regard to the integration, development and sustainability of the research centre funded by the National Programme of Sustainability II.	D2.9
	3. Cooperation with universities and participation in education		
		Scope of cooperation with universities on national and international level	D3.1
		Effectiveness of joint research centres	D3.2
		Success rate in supervision of PhD students	D3.3
		Participation of PhD students in the outputs	D3.4
		Participation of the institute in master or bachelor studies.	D3.5
		Assessment of cooperation intensity with universities in the form of teaching	D3.6

	4. Outreach activities		
		Sufficiency of media strategy and activities in the area of research popularisation (courses and lectures for general public, popularisation publications, educational films, videos, television and radio programmes, children and youth educational activities and other activities in the interest of general public)	D4.1
		Publishing activities and its quality	D4.2
		Participation in professional organisations in the area of research and development	D4.3

Structure of the final report – Phase II

Basic information about the institute and its teams

<p>Name of the institute:</p> <p>Activities annotation:</p> <p>Institute website:</p> <p>List of all teams and their leaders:</p>

Part A: Evaluation of the institute

Overall evaluation of the institute elaborated in agreement of all commissions' chairs, who evaluated the institute.

Strengths and weaknesses:

Opportunities and threats:

The commission shall comment on the topics relevant to the evaluation of the institute not the team.

Type of criterion	Criterion	Topic	Comments of the commission on particular topics
Main	1. Quality of results	H1.1–H1.5	
	2. Societal relevance	H2.1–H2.5	
Further	1. Position in international and national context	D1.1–D1.3	
	2. Vitality, sustainability and strategy	D2.1–D2.9	
	3. Cooperation with universities and participation in education	D3.1–D3.6	
	4. Outreach activities	D4.1–D4.3	

Other comments of the commission:

Part B: Evaluation of teams

The team evaluation is performed by field commission to which the team had registered.

Commission (N1) evaluating the institute:

Commission:

Commission Chair:

Evaluated teams:

Commission (Nx) evaluating the institute:

Commission:

Commission Chair:

Evaluated teams:

N1 team

Strengths and weaknesses:

Opportunities and threats:

The commission shall comment on the topics relevant to the evaluation of the team not the institute.

Type of criterion	Criterion	Topic	Comments of the commission on particular topics
Main	1. Quality of results	H1.1–H1.5	
	2. Societal relevance	H2.1–H2.5	
Further	1. Position in international and national context	D1.1–D1.3	
	2. Vitality, sustainability and strategy	D2.1–D2.9	
	3. Cooperation with universities and participation in education	D3.1–D3.6	
	4. Outreach activities	D4.1–D4.3	

Team categorisations and a brief commentary:

Other comments of the commission:

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Annex 10 – Timetable

Activity	From	To
Approval of methodology		12/02/2019
Preparation of procedural part of the methodology	01/03/2019	
Launch of internal information campaign	01/03/2019	
Expert recruitment	01/03/2019	
Completion of information system (OIS) for evaluation		31/08/2019
Background documents for application		
List of researchers in the team	01/01/2020	31/01/2020
Submission of the Phase I outputs	01/01/2020	19/02/2020
Brief comment to the submitted outputs	01/01/2020	15/03/2020
Check of the bibliometric data	10/03/2020	20/03/2020
Access to full texts of the presented outputs	01/01/2020	31/03/2020
Full text of the application	01/01/2020	30/11/2020
Implementation of Phase I	01/04/2020	30/06/2020
Qualitative profiles processing	30/06/2020	31/08/2020
Presentation of the report on Phase I to the Academy Council of the CAS		31/08/2020
Institutes appoint observers for Phase II	01/12/2020	08/01/2021
Implementation of Phase II	11/01/2021	14/05/2021
On-site visits	08/03/2021	21/03/2021
Submission of objections to the final reports	17/05/2021	03/06/2021

Settlement of institutes' objections	04/06/2021	18/06/2021
Final statements of the institutes	21/06/2021	30/06/2021
Presentation of the summary report to the Academy Council of the CAS		July 2021
Presentation of the summary report to the Academy Assembly of the CAS		December 2021
Publication of evaluation documents on the CAS website		December 2021