BIOLOGY CENTRE CAS

BIOLOGICAL CENTRE OF THE CZECH ACADEMY OF SCIENCES

Mandatory open science procedures within Projects supported by the Technology Agency of the Czech Republic

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BIOLOGY CENTRE CAS

CONTENTS

1 GENERAL INFORMATION

This document describes the requirements of the Technology Agency of the Czech Republic (TA CR) for open access to research data and results of projects funded by state support under Act No. 130/2002 Coll. Open access is key to promoting transparency, trust, and faster use of results and innovations. To ensure effective and practical cooperation in applying the principles of open science, it is essential that the dissemination of project results and data be in accordance with the principle: "as open as possible, as closed as necessary."

The amendment to Act No. 130/2002 Coll., on the support of research and development, from 2022, introduced the obligation to publish/provide research data for all projects financed from state support from calls announced after January 9, 2022.

The purpose of open access is to make research outputs/results and the data necessary for their validation available to the widest possible audience as soon as possible after their creation. Open access supports the preservation, verification, or wider use of outputs/results and research data in practice or in subsequent research (including in other areas). It accelerates the achievement of outputs/results and significantly supports innovation. Open access also contributes to transparency and control over the use of state support, and increases quality, trust, and creativity in research.

2 OPEN ACCESS TO SCIENTIFIC AND RESEARCH DATA

Research data is information, other than scientific publications, in electronic form that is collected or created during research or development and is used as evidence in the research or development process, or that is generally accepted by the research community as necessary for the validation of research or development findings and results.

Open access means ensuring free online access to research data for the purpose of further use, application, reproduction, and dissemination. Such access must be ensured for everyone; it cannot be limited to a specific group of individuals or institutions. Research data serves to validate the presented outputs/results, contributes to further and faster innovation, and increases the citation rate of publications. For open data and its sharing, it is necessary to apply the approach "as open as possible, as restricted as necessary," considering the interests of the beneficiary. In addition to data openness, it is also important to adhere to FAIR principles when sharing data.

2.1 FAIR principles

FAIR principles apply to both research data and metadata describing data sets. These are principles for describing, storing and sharing research data.

Findability of data and metadata: Compliance with this principle is ensured by high-quality and rich metadata, including internationally recognized unique persistent identifiers. Metadata, and therefore the data itself, are easily findable by both users and machines.

Accessibility of data and metadata: Ideally, data and metadata are stored in a trustworthy repository, machine-readable, and openly accessible to users and machines via a suitable open protocol in an open format. It is not always possible to make data completely open, but metadata should be available even

if the data itself is not publicly accessible, available based on authentication, or deleted. Metadata should also carry information about the conditions of access to the data.

Interoperability can be achieved by using standardized formats, languages, data description standards, and controlled vocabularies that comply with FAIR principles. It is also important to ensure not only links between the metadata of the dataset and other related publications and outputs (e.g., published article, dataset, and research report), but also links between other entities such as authors, institutions, projects, and outputs. The use of persistent identifiers is also essential for improving interoperability and entity linking.

Data reuse: The possibility of data reuse is increased by a rich metadata description, clear instructions for data reuse based on the stated license, and information about the origin of the data and how it was obtained (tools used, methodologies, so-called technical metadata, etc.).

The beneficiary should manage research data generated during the project in accordance with the above principles. Good data management improves transparency, efficiency, risk management, organization, and data storage, ensures continuity and consistency during personnel changes in the project, prevents duplication of activities, and facilitates the preparation of publications and data sharing.

2.2 Mandatory open science procedures

For calls for proposals in research, development, and innovation and for international calls, the TA CR has established the following obligations for beneficiaries based on Act No. 130/2002 Coll.:

1. In the project proposal, the beneficiary shall describe the method of managing the project's research data and provide information on the availability and method of dissemination of research results and research data, if they are created using public support funds. This is not a full-fledged Data Management Plan (DMP). **In simple terms, it is a brief description in which the beneficiary can include the following text:**

   A DMP (Distribution Management Plan) will be created within the project, describing what data will be created, processed, stored and shared in the long term. The data will be managed in accordance with the FAIR (Findable, Accessible, Interoperable, Reusable) principles, which will ensure their easy availability and reusability. The person responsible for data management will be the project principal investigator, who will ensure the collection, analysis and secure storage of data during the project and after its completion.

   Research results and related research data will be made available as soon as possible after their creation in Open Access mode, except in cases where their commercial use or the protection of sensitive information prevents this. Publications and data will be provided with permanent identifiers and, including the corresponding metadata, will be stored in suitable trusted repositories that ensure their long-term storage, searchability, accessibility and interoperability. This will support the transparency of scientific work, the possibility of verifying results and their wider use in the scientific community and in practice.

   Any restrictions on open access (e.g., for commercial use) will be justified in detail and addressed in accordance with TA CR rules, Czech Academy of Science rules and applicable legislation

2. **The beneficiary shall submit the DMP together with the first interim report.** This is a document that captures the main aspects of the research results life cycle (i.e., collection, storage, access, sharing, and possible deletion) from the beginning of the project and attempts to define procedures for working with these outputs (primarily research data), both during and after the project. Preparing a DMP is part of the project methodology; well-defined and set up data management makes work more efficient, saves time, contributes to information protection and increases the value of data.

To prepare the DMP, the beneficiary may use:

- Excel TA ČR form (the same for all TA ČR calls)
- The European Commission template for the Horizon Europe program

We recommend using the CAS FAIR Wizard online service to prepare a DMP. This tool facilitates the creation of a DMP and includes a Horizon Europe template. Within the FAIR Wizard tool, the DMP is created by the user answering questions about their research data, being guided through the entire process, and finally generating a completed DMP based on the TA ČR template. The DMP can also be edited later.

While filling it out, the tool automatically evaluates how well DMP meets FAIR principles and other metrics, with accompanying explanatory comments. This way, the beneficiary is guided through creating your DMP, and the questions with predefined answer options mean the beneficiary doesn't have to write another appendix to the project documentation. FAIR Wizard also lets the beneficiary share his/her DMP across the project team. To log in to the tool, use institutional login credentials (Shibboleth). These are the same as the login credentials for the VERSO system.

Note: This document is not intended to describe all the requirements for the content of the DMP itself! We are ready to help you with the preparation of the DMP, as well as with logging in and using the FAIR Wizard tool (see above). Please do not hesitate to contact us (frantisek.vorel@bc.cas.cz).

It is necessary to think about preparing the DMP well in advance, not 48 hours before the deadline. The project department regularly provides information about obligations and deadlines in advance. It is important to emphasize that no one else can completely process the DMP for researchers. Technical and Administrative Service staff do not have all the information necessary to create a DMP for a research team. TA ČR checks the content requirements not only formally but also factually! Therefore, cooperation is essential.

3. **The beneficiary shall submit an updated version of the DMP to the grant provider as part of each subsequent interim and final report**.

4. **The beneficiary is obliged to ensure open access to research results.** The types of results to which this obligation applies are always specified in the tender documentation/conditions of the relevant public tender or international call for R&D&I. These are usually results of type J (Article), N (Certified Methodology), and Vsouhrn (Summary Research Report). These are mainly publication results.

   The open access condition is fulfilled if both of the following steps are completed:

4.1. Storage and access to publication outputs and research data in a trusted repository: The beneficiary must store the machine-readable final version of the text, i.e., the publisher's version or postprint in the repository without undue delay after completion of the output.

4.2. The beneficiary must also ensure open access in one of the following ways:

4.2.1. Auto-archiving (the so-called green route to open access): Making the full text available in an open trusted repository within 6 months of publication of the article or similar publication results or completion (for other types of results), but no later than the end of the project. This applies to situations where the article is published in a subscription journal without open access publishing.

4.2.2. Publishing in an open journal (golden route of open access).

4.2.3. Publication in an open journal without fees (diamond/platinum/route of open access).

5. **The beneficiary is obliged to publish, at the latest by the end of the project, research data** associated with peer-reviewed publications that are necessary for the validation and replication of the published results in the article, data related to other research outputs (utility model, patent, sample, workflow, etc.), including unpublished ones, or data that is not related to specific research outputs but is potentially useful outside the project, **without delay in a trusted subject-specific, universal, or institutional repository under a CC BY 4.0 license**. It is also advisable to link the data record to the publication record in the repository. It is possible to use either one of the subject repositories according to the customs of the field, or a general repository (e.g., ZENODO) to publish a record. It is also possible to use ASEP (Institutional Repository of the Czech Academy of Sciences). Data must be provided free of charge. **The publication of research data together with the publication is verified by the provider!**

6. The beneficiary provides research data and information about it in an open and machine-readable format and under conditions that are objective, reasonable, non-exclusive, non-discriminatory, and do not restrict the manner or purpose of their subsequent use.

7. **Where an exemption from the obligation to publish and make available all or part of the research data is applied, the beneficiary must state in the data management plan the reasons why** it has decided to restrict access to some or all the research data and ensure a regular review of this justification.

   These reasons may include:

   - the right to privacy,
   - protection of personal data,
   - confidentiality of information and data,
   - legitimate commercial interests, trade secrets, and third-party intellectual property rights,
   - national security,
   - conflict with the legitimate interests of the beneficiary, including commercial use of the data.

   In such cases, however, **the obligation to publish metadata** (information about research data) in accordance with FAIR principles **still applies**. Metadata must be publicly available and machine-readable. Once a year for a period of 5 years after the end of the project, the beneficiary shall review whether the reasons for not publishing the research data are still valid. If the reasons no longer apply (e.g., the result could not be commercially exploited), the recipient shall publish the research data through the R&D Information System (IS VaVaI).

8. The beneficiary must submit information on research data not only to TA ČR, but also to Information Register of R&D (RIV, field R97) and update the data within five years of the end of the project (e.g., if the reasons for not publishing the data no longer apply, if the result could not be commercially exploited, etc.).
9. It is necessary to include the following dedication in the text of all publications: "The project (project number/name) is/was co-financed with public support from the Technology Agency of the Czech Republic within the framework of the Program (insert the relevant program)".

3 PROCEDURES FOR THE PROGRAMME FOR PUBLIC TENDERS

For public tenders in research, development and innovation, the rules listed above apply with the following differences:

- The first Data Management Plan is submitted by the selected contractor/funding beneficiary before signing the Contract.
- The Data Management Plan form is specified by the contracting authority (TA CR) for each public tender.
- Changes to the data management plan are reported by the beneficiary on an ongoing basis (as they occur, not on a regular date).
- The final version of the Data Management Plan is submitted by the beneficiary at the end of the project.

4 PROCEDURES FOR PUBLIC PROCUREMENT PROGRAMS

The Unified Information System of TA CR, SISTA, is used to report on compliance with the provision of open access to research results and data in interim and final reports. The beneficiary fills in the required information directly into the information system. If assistance is needed, beneficiary can contact the BC Project Department.

5 CONCLUSION

Please note that the above rules are based on legislative requirements and the requirements of TA CR. In the future, similar requirements will gradually be applied in an identical form to all BC projects, regardless of whether they are supported by public or private sources.

Furthermore, from 2025, a new T-type result will be included in the five-year evaluation of research organizations in terms of publication activity: Digital Data Collections.

The result of a “digital data collection” includes any datasets in digital form as a result of research created by a non-trivial process or their combination within the framework of the implemented research, which bring new utility value for subsequent research, development or innovation. A digital data collection must meet the following characteristics:

- Be provided with machine-readable and publicly available metadata according to the FAIR principles.
- Be assigned a unique, machine-processable persistent identifier (e.g. DOI, HANDLE and other types of PIDs).

- Be assigned a binding license or conditions for further use and distribution, including a description of new utility values for subsequent research, development or innovation.
- Be stored, including metadata, in a publicly available trusted or industry-certified digital repository, for example in the repositories of large research infrastructures, or in the National Repository Platform EOSC CZ (ASEP is a part of it).
- Have at least one author who participated in the research carried out.

Institutions that adhere to FAIR principles when handling research data may now achieve a better rating!

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