

THE 17TH NATIONAL INFORMATION DAY

Open Science, Open Data, Open Access, Bulgarian Open Science Cloud

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CONCLUSIONS

This traditional overview of the advancement of open science in Bulgaria highlighted key novel developments in 2025–2026. There was a noticeable progress in the legislation, the volume of deposited open access publications in BPOS, and some welcome institutional initiatives contributing to the capacity building and skills’ landscape. The launch of the first national award for open science is another welcome development.

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[2] Stanchev et.al., The 16th National Information Day: Open Science, Open Data, Open Access, Bulgarian Open Science Cloud. Digital Presentation and Preservation of Cultural and Scientific Heritage, 15, IMI-BAS, 2025, ISSN:13144006, DOI: <https://doi.org/10.55630/dipp.2025.15.33>, 343-354.

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Open Science, Open Data, Open Access, Bulgarian Open Science Cloud

Abstract:

This paper gives a comprehensive overview of the current landscape and the ongoing efforts regarding open science at national level, focusing on open access to scientific information, open data, and the Bulgarian Open Science Cloud.

Keywords: Open Access, Access to Knowledge, Open Science, Open Data, Repositories

1. INTRODUCTION

In the earlier years, the Bulgarian Open Science Cloud is mainly serving as a developing initiative and strategic objective. By 2024–2025 it has become a functioning ecosystem discussed in terms of services, integration, user growth, repository interoperability and long-term sustainability. Bulgarian initiatives are increasingly framed within European developments via EOSC interoperability, FAIR principles, OpenAIRE guidelines and European monitoring frameworks. The National Information Day shows the maturation of Bulgaria's open science ecosystem from advocacy and awareness-building toward a nationally coordinated, policy-supported, and infrastructure-driven implementation model integrated with European open science initiatives [2].

2. BULGARIA OA JOURNALS, REPOSITORIES AND PORTALS

Data for Bulgarian open access repositories in 2026 are shown in Figure 1.

OPEN ACCESS BULGARIAN REPOSITORIES 2025	SOFTWARE
New Bulgarian University Repository Link: https://eprints.nbu.bg	EPrints 3.4.3
Bulgarian Digital Mathematics Library (BulDML) at Institute of Mathematics and Informatics, Bulgarian Academy of Sciences (IMI-BAS) Link: https://buldml.math.bas.bg	CultIS
Digital repository of Sofia University Link: https://research.uni-sofia.bg	DSpace 1.8.2
D.A.Tsenov Academy of Economics - Digital Library Link: https://dlib.uni-svishtov.bg	DSpace 6.3
Academic Research Repository at the Burgas Free University Link: https://research.bfu.bg:4000/home	Dspace 1.8.1
Central Medical University - MU, Sofia Link: https://cml4.mu-sofia.bg:4000/home	DSpace 7.4
Medical Academic Repository - Medical University - Varna Prof. Dr. Paraskev Stoyanov Link: https://repository.mu-varna.bg/	Dspace 6.2

Digital Library of the University Library of Sofia University Link: https://digital.libsu.uni-sofia.bg	CultIS
Bulgarian Portal for open science (BPOS) Link: https://bpos.bg/	Elasticsearch
Technical University of Sofia (E-Publications) Link: https://e-university.tu-sofia.bg/e-publ/search.php	Technical University
Digital Library SU 'St.Kliment Ohridski' Link: https://sudigital.org/lib/	CDS Invenio v0.99.1
NALIS Repository - The founders of the National Academic Library and Information System Foundation (NALIS Foundation) Link: http://digilib.nalis.bg/xmlui/	DSpace 6.2
Repository of the University of Chemical Technology and Metallurgy Link: https://rilib.uctm.edu/home	DSpace 7.6
Open access repository of the Central Library of the Bulgarian Academy of Sciences (CL-BAS Repository) Link: http://dspace.cl.bas.bg/xmlui/	Dspace 6.2

Fig. 1. Open Access Bulgarian repositories in 2026

The total number of indexed OA journals in Bulgaria (DOAJ: Directory of Open Access Journals) is 96. The existing Bulgarian national (open datasets) portals are:

Bulgarian Portal for Open Science (<https://bpos.bg/>) – BPOS is the national repository for data and publications resulting from research funded wholly or partially by public funds, maintained by the National Center for Information and Documentation (NACID). The repository is multidisciplinary, allowing the upload of publications and research results from all scientific fields.

- **Open Data portal** (<https://data.egov.bg/>) – Access to public open data sets in machine-readable format. It contains data sets from many organizations.
- **National Spatial Data Portal** – Infrastructure for Spatial Information, INSPIRE (<https://inspire.egov.bg/>) includes data sets, services and maps.
- **National Statistical Institute** (<https://www.nsi.bg>) – Similar to the open science portal, the NSI provides free and unrestricted access, but for selected data sets in machine-readable data formats in CSV, JSON.

3. THE MAIN OPEN SCIENCE ACTIVITY IN BULGARIA 2025-2026

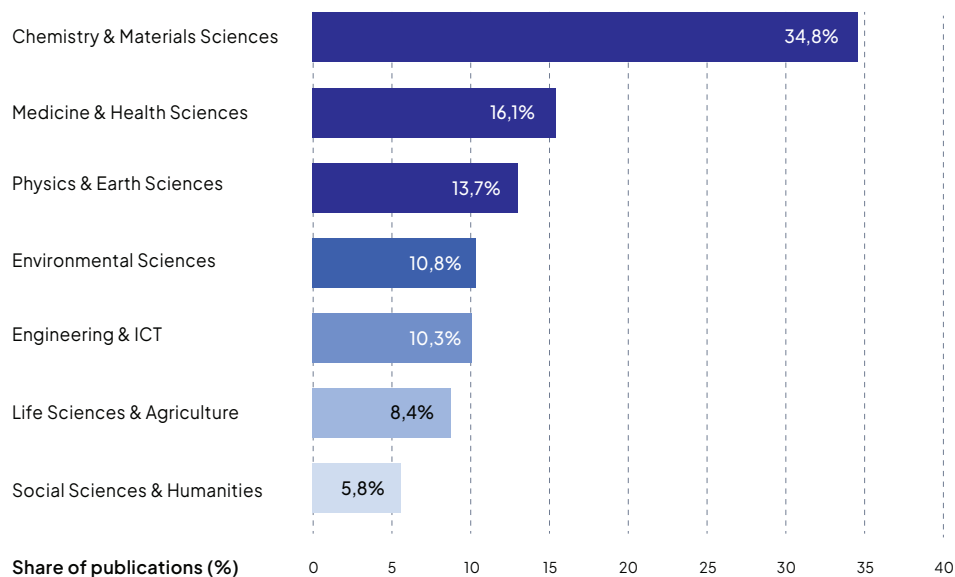
On November 10, 2025, on the World Science Day for Peace and Development, the First Prize of the Ministry of Education and Science for an overall contribution to open science, “ORBIT,” 2025 to a research team from the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences (BAS) – Prof. Desislava Paneva-Marinova, Ph.D., and Senior Assistant Prof. Maxim Goynov, Ph.D., for “The Development and Implementation of Open-Access Digital Libraries for Scientific, Educational, and Public Institutions in Bulgaria”. The award was presented by the Deputy Minister of Education and Science, Acad. Nikolay Vitanov.

The team has developed, implemented, and continues to maintain the Institute of Mathematics and Informatics’ open-access digital libraries for scientific information (BulDML, Bulgarian Digital Mathematics Library, <https://buldml.math.bas.bg>), the University Library of Sofia University (LibSU, publicly accessible as of March 10, 2025, <https://digital.libsu.uni-sofia.bg>), the National Statistical Institute, etc. The new release of the open access repository of the Central Library of the Bulgarian Academy of Sciences is in its final stages and is expected to be made available to the public within a few months. BulDML and LibSU are integrated with the Bulgarian Open Science Portal. These two digital libraries provide open access to more than 58 000 digital objects in the field of science.

NATIONAL POLICY AND INFRASTRUCTURE

Bulgaria adopted a National Plan for the adoption and implementation of open science policies in January 2021. The general aim of the plan is to provide the research community and the public with access to scientific publications and research data in an open and non-discriminatory way at its earliest possible stages, ensuring the ability to use and re-use this information. The plan foresees the adaptation of national policies, initiatives, and research infrastructures, as well as the creation of conditions for inclusion and interoperability with the European Open Science Cloud. It also promotes the development of a coordinated national framework for open science implementation across research-performing institutions. In addition, it supports the alignment of national practices with European standards and best practices in research data management. The plan encourages the development of institutional capacities and skills needed for effective data sharing and stewardship. Furthermore, it aims to strengthen collaboration between stakeholders in the research ecosystem to ensure sustainable implementation of open science principles (Figure 2).

DISCIPLINARY DISTRIBUTION OF OA PUBLICATIONS UNDER THE ELSEVIER-MES AGREEMENT (2022-JUNE 2026)



Source: Author's calculations based on Elsevier agreement usage data (n = 379 publications)

Fig. 2. OA Publication under Elsevier-MES Agreement

Over the past decade, open access (OA) publishing has increasingly reshaped the global research landscape, enhancing the visibility, accessibility, and impact of scientific outputs. In line with these developments, the Bulgarian Ministry of Education and Science (MES) has continued its collaboration with Elsevier through a new national agreement covering the period 2025–2029. Unlike the previous quota-based model, the new agreement removes publication limits and enables researchers from eligible Bulgarian institutions to publish an unlimited number of open access articles in participating Elsevier journals without incurring Article Processing Charges (APCs)

The previous agreement (2022–2025) introduced a quota-based model, allowing Bulgarian corresponding authors to publish a limited number of OA articles annually. The publication quotas were gradually increased from 100 articles in 2022–2023 to 180 in 2023–2024 and 260 in 2024–2025. This approach successfully stimulated institutional engagement with open access publishing and helped establish the necessary administrative and organizational mechanisms for participation.

Data from the agreement demonstrate a steady increase in OA publishing activity. Between 2022 and June 2026, Bulgarian researchers published 378 open access articles through the Elsevier agreement. The number of approved publications grew from 34 articles in 2022 to 90 in 2023, reaching 109 in 2024 and remaining at a similarly high level with 108 publications in 2025. By mid-2026, an additional 37 articles had already been approved, indicating continued strong demand for OA publishing opportunities.

The disciplinary distribution of publications demonstrates a clear predominance of STEM-related research fields. Chemistry and Materials Science account for more than one-third of all open access publications (34.8%), followed by Medicine and Health Sciences (16.1%) and Physics and Earth Sciences (13.7%). Environmental Sciences and Engineering also show substantial participation, together representing over one-fifth of the total output. Although Social Sciences and Humanities account for a comparatively smaller share (5.8%), their presence indicates that the benefits of the agreement extend beyond the natural sciences and technology-oriented disciplines. Overall, STEM disciplines represent approximately 94% of all publications supported under the agreement, highlighting the strategic importance of open access publishing for internationally competitive research fields and reflecting broader European trends in scholarly communication.

The distribution of publications across institutions, however, remains uneven. The Bulgarian Academy of Sciences accounted for 173 publications (approximately 46% of all approved articles), followed by Sofia University St. Kliment Ohridski with 97 publications (26%). Together, these two institutions generated more than 70% of all OA outputs under the agreement. Medical universities and several regional higher education institutions also participated, but at substantially lower levels.

The introduction of an unlimited publishing model under the 2025–2029 agreement is expected to remove remaining capacity constraints and further accelerate Bulgaria's transition toward open science. At the same time, the existing disparities between institutions suggest the need for continued efforts in awareness-raising, training, and institutional support. Ensuring that researchers across the entire higher education and research sector can fully benefit from the agreement will be essential for maximizing its impact on the visibility, accessibility, and international competitiveness of Bulgarian research.

As part of its commitment to advancing the objectives outlined in the National Plan, the Ministry of Education and Science is developing the National Programme for open and responsible science. This initiative is designed to embed the principles and practices of open and responsible science into the standard research culture across the Republic of Bulgaria. The overarching aim is to improve access to scientific results, enhance the transparency of research activities, and promote a more open, collaborative, and impactful scientific environment.

The Programme supports the creation and maintenance of a sustainable infrastructure for storing and accessing scientific data, while also fostering the development of essential skills and competencies among researchers and encouraging robust national and international collaboration. A core objective is to ensure that the Programme evolves into a sustainable, long-term process aligned with the strategic development of Bulgaria's educational and research systems. This vision is intended to help Bulgarian researchers, universities, and research organizations accelerate the adoption of open access policies, thereby increasing the visibility of their work and strengthening the international standing of Bulgarian science.

By promoting open and responsible science, the Programme also facilitates effective interdisciplinary and cross-sectoral cooperation, which serves as an essential tool for addressing pressing global challenges. The overarching goal is to support the implementation of open science principles within scientific organizations and higher education institutions, in alignment with European and global standards, ultimately enhancing the visibility, accessibility, and impact of scientific research.

The Programme is structured around five main pillars. The first pillar focuses on the pilot introduction of open access publishing, implemented through the National Publishing House for Education and Science "Az-buki", and aims to promote open access publishing models to enhance the visibility and dissemination of scientific outputs. The second pillar supports the development and enhancement of open science infrastructure, including the creation and sustainable management of repositories, platforms, and tools that enable data sharing, long-term preservation, and interoperability in line with European and international standards. The third pillar is dedicated to training and education, aiming to raise awareness and build skills among researchers, educators, and students through

training programmes, workshops, and the integration of open science principles into academic curricula. The fourth pillar focuses on policy integration, providing advisory and methodological support for the implementation of European and national policies on open and responsible science, while also fostering international cooperation and participation in joint initiatives. The fifth pillar emphasizes promotion and engagement through the organization of forums such as schools, workshops, information days, and conferences, the development of educational materials to raise public awareness, and the introduction of incentives to encourage the adoption of open and responsible science practices.

The Programme supports the development of a comprehensive open science ecosystem through activities aimed at strengthening institutional capacities, governance, infrastructure, and skills. These include the development and implementation of institutional open science policies, regulations, action plans, and monitoring mechanisms; the establishment of open science coordinators and dedicated teams; the modernization of digital and e-infrastructures, including institutional repositories and their integration with national and European initiatives such as EOSC; the implementation of data, metadata, and interoperability standards; the provision of storage and long-term preservation solutions for research outputs; extensive capacity-building and training activities on open science, FAIR principles, and research data management; the development of educational resources and guidance materials; the promotion of incentives for open access publishing and recognition of open science achievements in research assessment and career development; and the encouragement of citizen science participation and broader societal engagement with research.

Through these efforts, the pilot programme for open and responsible research aims to foster a more inclusive, transparent, and internationally connected scientific ecosystem in Bulgaria. By strengthening institutional capacities, promoting good research data management practices, and supporting the adoption of open science principles, the programme seeks to create the foundations for a sustainable culture of openness and collaboration across the national research landscape. The long-term objective is to build on the success of this pilot initiative and transform it into a fully-fledged national programme for open, responsible, and citizen science.

OPEN DATA AND CLOUD COMPUTING NATIONAL INITIATIVE IN BULGARIA

The National Initiative Open Data and Cloud Computing (NI ODCC), established by the nine members of National Centre for High-performance and Distributed Computing (NCHDC), object of the National Roadmap of RIs (IICT-BAS – leading organization, and SU, TU-Sofia, MU-Sofia, PU “Paisij Hilendarski”, UniBIT, IMI-BAS, IMeh-BAS, NIGGG-BAS – members), requires diverse expertise to achieve its full potential, but also opens distinct possibilities, especially in high performance data analytics and artificial intelligence, as well as traditional high performance computing (HPC) applications. In the framework of this initiative, the partners’ digital resources and general and thematic services were maintained, technical assistance for compliance with EOSC requirements was provided, and supporting activities to optimize services for research and innovation were ensured. The interest of researchers in using the data infrastructure provided by the NCHDC continues to increase. The reason is not only the open and transparent access, but also the reliable maintenance of the equipment and high-quality support to users. There is a significant growth in scientific publications presenting results obtained using the infrastructure (over 50 OA publications in the last year). During the reporting period, special attention was paid to researchers in social sciences/humanities.

Concentrating on sharing and disseminating information about the data infrastructure, services and expertise of the NI ODCC participants, during the last year, a series of 4 OS seminars for PhD students and young people were delivered in order to help them to gain visibility through OA publications. The Open Science seminar series, held in person in IICT-BAS premises, from February to June 2026 started with a general presentation entitled “Open Science and the Benefits for the Research Community” where the contemporary trends and approaches related to transparency, accessibility and sharing of scientific results, as well as the role of open science in the development of doctoral students’ scientific careers were presented.

The main principles of open science as a model for the creation and dissemination of scientific knowledge, including the distinction between closed and open science practice were outlined. Emphasis was placed on free access to scientific publications, research data, software and educational resources, as well as on fundamental values such as collaboration, transparency and reproducibility of results. The second seminar presented an analysis and practical recommendations for the preparation of open access scientific publications, as well as the platforms for discovering AI generated text and plagiarism. In the third seminar, systematized lists of Bulgarian open access journals were presented, grouped into four areas (which correspond to the main fields of participating 9 organizations): “Medicine and Health Sciences”, “Informatics, Mathematics and Artificial Intelligence”, “Engineering and Technical Sciences” and “Interdisciplinary and University Publications”. For each journal, the thematic scope, language of publications, indexing and its specific characteristics were indicated.

THE BULGARIAN PORTAL FOR OPEN SCIENCE

Sustaining this level of growth is particularly noteworthy given the absence of an active national open science programme to encourage researchers and institutions to deposit their outputs in the Portal. The distribution of document types on the Portal, presented in Figure 2, has remained largely unchanged. Scientific articles continue to dominate the collection, accounting for 80% of all resources, followed by dissertations (11%), conference proceedings (5%), books and book chapters (3%), and other document types (1%) (Figure 3).

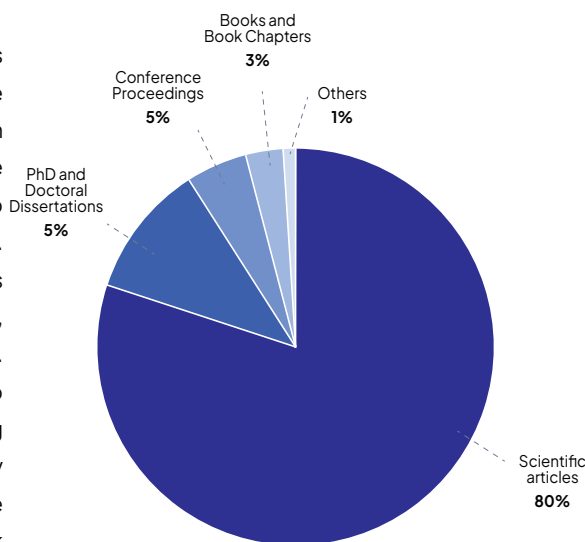


Fig. 3. Distribution of Publication Types in the Bulgarian Portal for Open Science. Data are current as of 17 June, 2026

The number of registered users contributing content to the Portal continued to grow, increasing by 6% over the past year and reaching 5,791 as of 17 June 2026. Of these, 5,273 are researchers, 303 are moderators, and 215 serve as organizational administrators (Figure 4.)

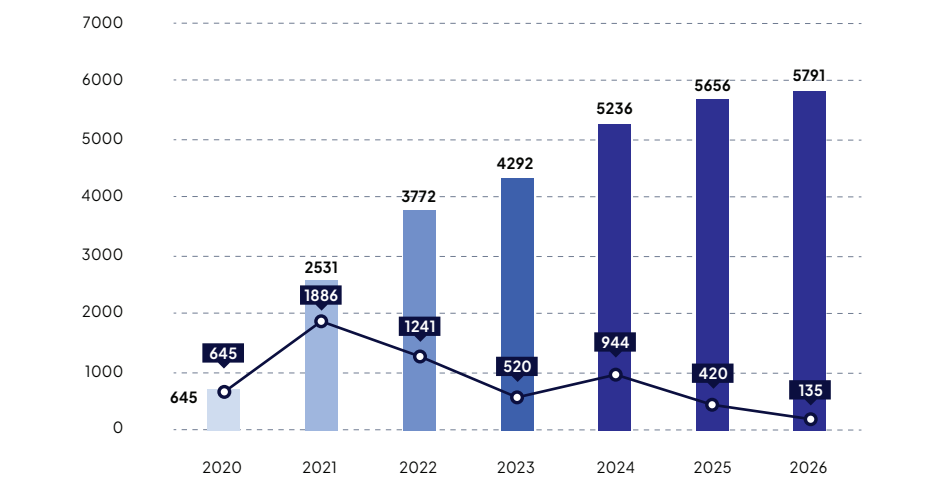


Fig. 4. Registered Individual Users by Year (2020 – 2026). The chart displays both the number of new users each year (line graph) and the total number of users per year (bar chart). Data for 2026 are current as of 17 June, 2026

The Bulgarian Open Science Portal (BPOS), which can be regarded as the cornerstone of open science in Bulgaria, has continued to expand its resource base at a rapid pace. Over the past year, the number of resources available through the Portal has increased by more than 40%, reaching a total of 122,554 documents as of 17 June 2026.

DIGITAL LIBRARY OF THE UNIVERSITY LIBRARY OF SOFIA UNIVERSITY

As of June 2026, LibSU's main collections contain over 51,000 library items and include: course readings, scientific publications by Sofia University researchers, dissertations defended at Sofia University, graduation theses, periodicals, rare and valuable editions and books, scientific heritage, ethnographic studies, and the archive of Acad. Stoyan Argirov, the “Slavica (1822–1922)” collection, manuscripts, cartographic resources, audio, video, photos, etc. Over the past year, LibSU has had over 1 030 000 visits and 239 000 unique users (excluding activity by administrators, editors, search engines, and bots) (Figure 5).

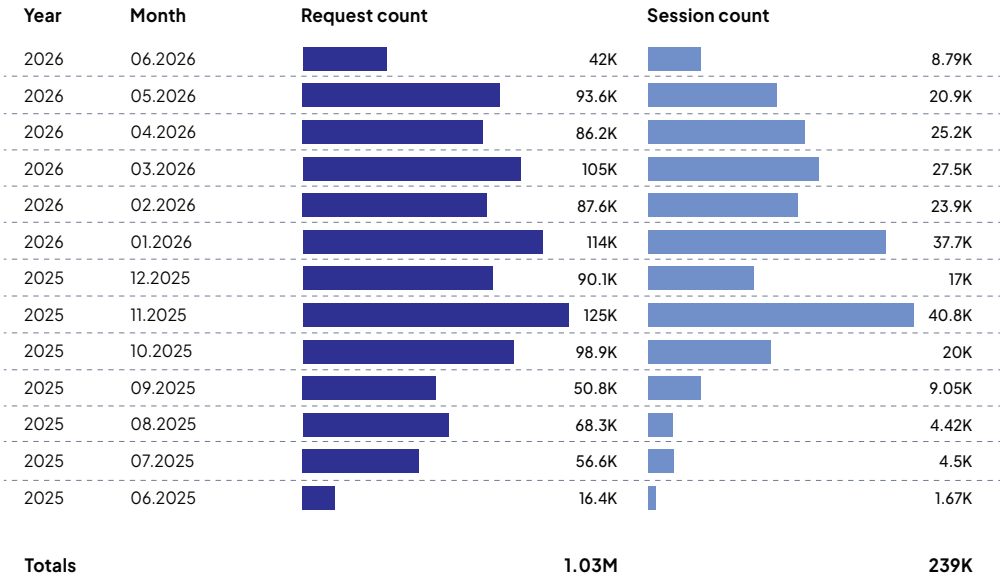


Fig. 5. LibSU Visits, June 2025 – June 2026

BULGARIAN DIGITAL MATHEMATICS LIBRARY (BULDML)

BulDML provides full-text, open-access digital access to all key publications and collections published by or in collaboration with the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences, as well as doctoral dissertations for the academic degrees of “Doctor” and “Doctor of Science,” among others. As of June 2026, the collection has reached a total of 6 968 publications, of which 5 765 are indexed and cited in the Bulgarian Open Science Portal. Over the past year, LibSU has had over 410 000 visits and 69 300 unique users (excluding bots and search engines) (Figure 6).

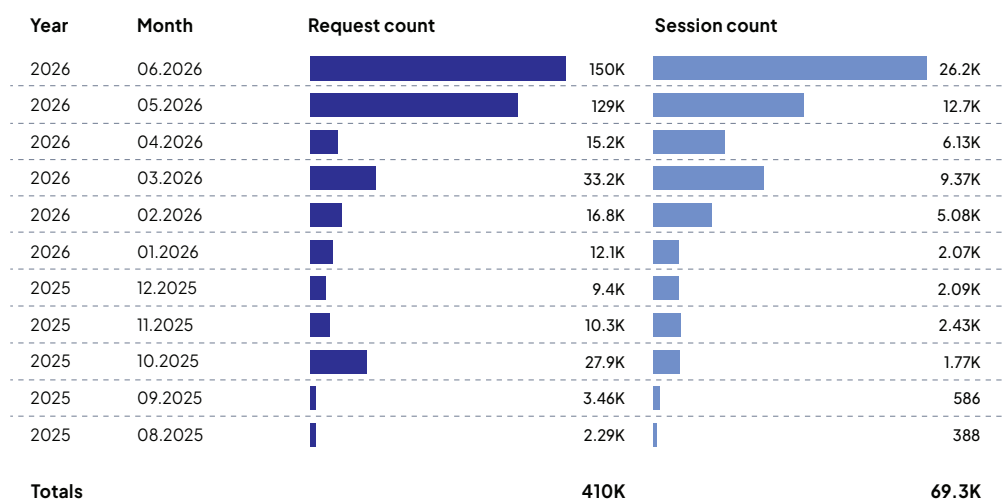


Fig. 6. BulDML visits 06.2025–06.2026

The Digital Library of the National Statistical Institute (NSI) provides digital access to over 1 200 000 digital pages from the NSI's book collection, a database for scientific research. The technological solutions developed offer extensive search capabilities for current and archived statistical information in Bulgarian and English across more than 14 000 bibliographic records and over 1 800 digital copies associated with them. Over the past year, there have been over 235 000 visits from 36 402 unique users (excluding bots and search engines). Digital libraries are built on original algorithmic solutions for the dynamic, intelligent management of large (Figure data sets, structured metadata, and knowledge. These solutions are implemented in the web-based, open-source CultIS platform, designed as an integrated solution for storing, retrieving, and curating data and knowledge from various fields. CultIS employs a modular, service-oriented architecture that supports heterogeneous digital assets through a unified data model. Advanced mechanisms have been developed for long-term and sustainable preservation, dynamic management of structured metadata, semantic organization, and open access to large digital archives. A set of functionalities has been developed for interactive virtual presentation,

multidimensional and full-text search, filtering, dynamic grouping through cross-sections, and hierarchical and multi-level indexing of content based on controlled vocabularies and classification schemes. The platform enables the creation of multilingual and application-specific user interfaces and visualizations, as well as the integration of additional functional modules according to user requirements. CultIS's innovative strategy focuses on achieving a high degree of configurability, scalability, and applicability of technological solutions for sustainable development. CultIS is implemented using established open-source software technologies, which ensure scalability, ease of maintenance, and adaptability to changing contexts and applications. Digital libraries created using CultIS are fully compliant with current accessibility standards (WCAG 2.0, Level AA) and the EU's best practices for accessible web content. The current W3C security recommendations and requirements for digital libraries are met. The highest level of technology readiness (TRL 9) has been achieved for implementation, deployment, and practical use.

THE PILOT PROGRAMME ON CAPACITY BUILDING IN OPEN SCIENCE

A major new effort in Bulgaria is the implementation of The Pilot Programme on Capacity Building in Open Science, supported by the Ministry of Education and Science and implemented in 2026. It is part of Bulgaria's wider effort to strengthen open and responsible science through targeted capacity-building measures for the national research ecosystem. The programme approaches open science as a new social contract for research: one that makes knowledge more transparent, reusable, inclusive and accountable. By combining training, mentoring, national dialogue and pilot projects, it aims to move from principles to practice and to help create the conditions in which open and responsible research can become part of the everyday academic culture in Bulgaria.

The programme is coordinated by the Institute of Mathematics and Informatics at the Bulgarian Academy of Sciences, in partnership with UNITE Centre of Excellence, Sofia University "St. Kliment Ohridski", the National Centre for Information and Documentation, and NGO Links. Prof. P. Stanchev and Assoc. Prof. M. Dobрева serve as academic

co-directors of the programme. In 2026, the key activities of the programme are aimed at increasing the capacity of the researchers, with particular focus on the support for data stewardship skills.

A key objective of the programme is to develop a model of collaboration between academic, governmental and non-governmental stakeholders. Fig. 7 summarises the main areas of intervention within the pilot programme.

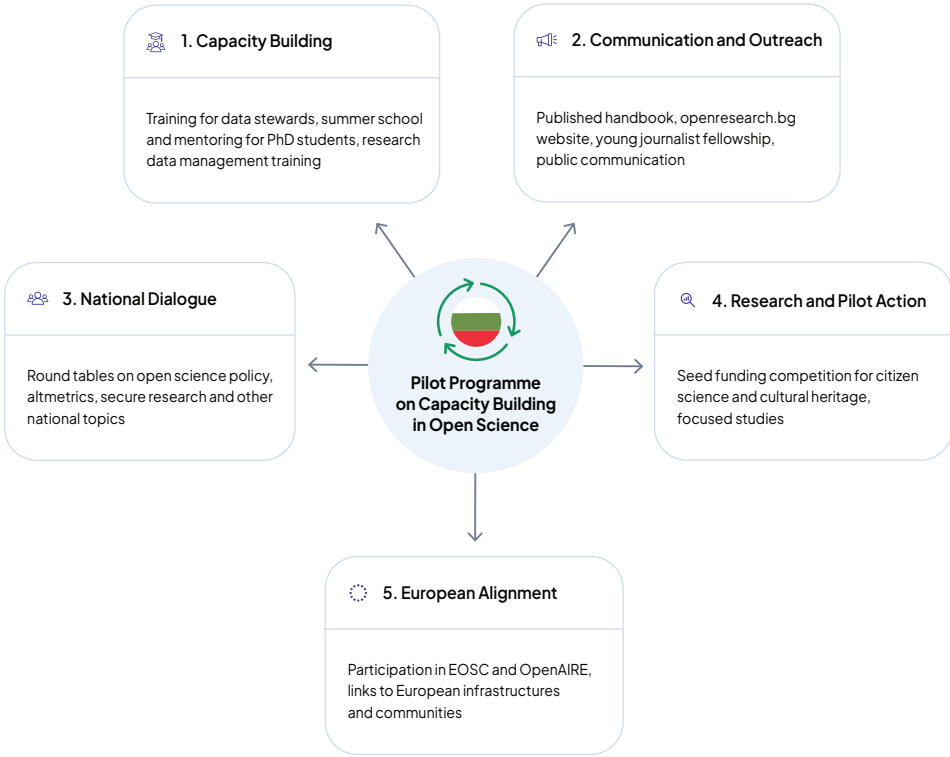


Fig. 7. Areas of intervention within the pilot programme on capacity building in open science

EVENTS AND CAPACITY-BUILDING ACTIVITIES

The programme has already launched a series of capacity-building activities. One of the first major events was the Training of Trainers for Research Data Management and Data Stewardship, held on 24 February 2026 at the Ministry of Education and Science. The training focused on the emerging role of the Data Steward as a key professional supporting responsible data management, open science, data quality, long-term preservation and reuse. The event was led by Magdalena Szuflińska-Żurawska from Gdańsk University of Technology and drew on the Polish experience in institutionalising open science policies and competence centres. A further training event, “Train the Trainers Programme on Research Data Management: Part 2 – Quality of Data Management Plans”, was delivered on 15 June 2026 at the Ministry of Education and Science in Sofia. This continued the programme’s focus on building practical capacity for research data management and improving the quality of data management planning. The first event brought together science managers, while the second prioritised representatives of data-intensive national infrastructures.

The pilot programme also organised a round table with international participation on “Policies in the field of open and responsible science” on 25 February 2026 at the National Centre for Information and Documentation. Its primary objective was to review and assess the current state of open science in Bulgaria, identify systemic challenges, and define future priorities and concrete measures for their implementation, with the aim of establishing a coordinated and sustainable national approach. The event brought together 35 representatives from universities, research organizations, and scientific publishers. The forum opened with a presentation by the guest speaker, Magdalena Szuflińska-Żurawska (Gdańsk University of Technology, Poland), who outlined key developments and good practices in the advancement of open science in Poland. The programme continued with three thematic panels focusing on: (1) the current state of open science in Bulgaria; (2) challenges and opportunities related to the development of a national FAIR data infrastructure and mechanisms to encourage the publication of FAIR data; and (3) translating policy into practice through a roadmap for implementing national priorities. Ivan Marić, Director of the University Computing Centre (SRCE) at the University of Zagreb, joined the forum remotely and shared valuable insights from Croatia’s experience in developing and implementing open science policies. The strong engagement of participants and the lively discussions throughout the event underscored the need for closer coordination among institutions to ensure the sustainable development of open and responsible science policies in Bulgaria and to promote their wider adoption within the research community.

As a result of the round table, participants developed the “Recommendations for Implementing National Priorities in the Field of Open and Responsible Science for the Period 2026 – 2030.” The document identifies key challenges to the advancement of open science in Bulgaria and proposes a set of recommendations for implementing national priorities in the field of open and responsible science. The recommendations were subsequently submitted officially to the Minister of Education and Science. Further round tables explore topics which are still underexplored in Bulgaria, such as the use of altmetrics in research assessment, as well as the issues around secure research.

SEED FUNDING COMPETITION FOR CITIZEN SCIENCE AND CULTURAL HERITAGE

As part of the programme, a Seed Funding competition was organised for the first time in Bulgaria to support one small pilot technological project focused on cultural heritage and citizen science. The selected project is expected to demonstrate how a small, focused technical team can create a working model for digitising, structuring and sharing cultural heritage in the spirit of open and citizen science.

The thematic scope included digitisation and structuring of cultural heritage, support for museums, archives, community centres and regional libraries, local history and regional studies, citizen science in cultural heritage, and the engagement of local communities through technological tools. Possible outputs suggested by this experimental call were prototype digital repository, a web-based system for describing and publishing cultural objects, a metadata and digital collections system, a crowdsourcing module, a cultural mapping tool, or a prototype compatible with national or European research infrastructures such as EOSC or OpenAIRE

The competition provided funding of up to EUR 3,600 for one project, to be implemented between April and November 2026. The project results are expected to be presented at the national conference on Open Science in October 2026. There were ten submissions to the call which demonstrated how timely and needed such support is for citizen science. There is definitely scope for an extended programme in the future, both in terms of funding and number of supported proposals.

COMMUNICATION, OUTREACH AND VISIBILITY ACTIVITIES

Alongside its training and policy-oriented activities, the Pilot Programme also includes a strong communication and outreach dimension. This is essential because open science requires not only new skills and policies, but also a broader cultural change in how research is understood, discussed and made visible to different publics.

A major communication output of the programme is the printed publication of the handbook “A Researcher’s Guide: In the Orbit of Open Science in Bulgaria” [1]. The handbook was widely distributed among researchers, doctoral students, research managers and institutional stakeholders. It provides an accessible introduction to the principles, terminology and practical implications of open science in the Bulgarian context, helping to translate international concepts into language and examples that are meaningful for the national research community.

The programme is also supported by the dedicated website openresearch.bg, which functions as a public-facing knowledge hub for open science in Bulgaria. The website brings together information about projects, events, tools, publications, studies and community-building activities. It enhances the programme’s visibility and provides a shared reference point for researchers, institutions, policymakers and other stakeholders interested in open and responsible research.

Another important outreach activity is the introduction of a young journalist fellowship, hosted across the participating organisations. This element recognises the important role of science communication in building public understanding of open science. By engaging a young journalist with the programme’s activities, the initiative supports the development of informed science communication capacity and helps translate open science debates for wider audiences beyond the academic community.

The programme also contributes to Bulgaria’s visibility in European open science debates through participation in relevant international networks and initiatives, including EOSC and OpenAIRE. These engagements help connect national capacity-building efforts with European infrastructures, policy discussions and good practice communities. They also ensure that lessons from Bulgaria’s pilot activities can be situated within wider European developments in open science, research data management, FAIR data, repositories and responsible research assessment.

NATIONAL PHD SCHOOL AND MENTORING PROGRAMME IN OPEN SCIENCE – 2026

One of the main training and support activities within the Pilot Programme “Open and Responsible Science – Bulgaria 2026” was the National Doctoral School on Open Science, held on 12–14 June 2026. The school was addressed to PhD students and early-career researchers and was designed as a practically oriented capacity-building activity. Its main objective was to connect the national open science agenda with the everyday research practices of young scholars: publishing, data management, use of repositories, documentation of research outputs, responsible use of digital and AI-based tools, and improvement of scientific visibility [1].

The programme combined lectures, discussions, self-assessment, demonstrations, and applied sessions. On 12 June the school started with the foundations and principles of open science, followed by a self-assessment tool for understanding and applying open science and a discussion session. The same day also included a presentation of the K-Trio project, which placed the training in a broader context of cooperation and awareness-raising. On 13 June the programme focused on FAIR principles and the data lifecycle, open-source tools, scientific software and AI tools, artificial intelligence for search and research work in academic libraries, models of open access and the legal framework of secondary publishing. A longer session within the BriGRETE project addressed research ethics and integrity, management, organization and sharing of research data, and the policies of scientific journals concerning the use of AI in publication activity. On 14 June the programme continued with data management plans, Horizon Europe requirements, practical tools, repositories and long-term preservation, followed by a discussion of FAIR principles through the example of Wikipedia. The final day also included sessions on preprints in specialized open platforms, citizen science and open scientific communities, scientific visibility and alternative bibliometric databases and platforms, and the launch of the mentoring programme.

The selection procedure confirmed the relevance of this type of training. A total of 66 applications were received and 45 participants were approved. The selected group included doctoral students and young researchers from universities, research institutes

and other academic organizations in Bulgaria. The largest groups came from Trakia University, Sofia University, Shumen University, the Technical University of Sofia and the Centre of Plant Systems Biology and Biotechnology, while a number of other institutions were represented by one or several participants. The disciplinary profile was also diverse. The strongest representation was in professional fields related to agriculture and veterinary medicine, technical sciences, health and life sciences, informatics, mathematics and artificial intelligence, economics, and interdisciplinary university research. This diversity was important, because open science practices are not implemented in exactly the same way across domains; they depend on the type of data, publication culture, research infrastructure, ethical requirements and collaboration patterns.

The group was relatively balanced by gender, with 20 women and 25 men among the approved participants. The participants also differed in research experience: some were at the beginning of their doctoral work, while others already had several years of research activity. This mixed profile made the school suitable not only for introducing basic concepts, but also for discussing practical problems that appear at different stages of the doctoral trajectory.

The preliminary information collected from the approved candidates showed that many participants had some contact with open science practices, but the use of repositories and open science tools was still uneven. A significant part of the participants had already published in an open access journal, and most dissertation topics were related to data processing and analysis. At the same time, only a small number had deposited research data in an open access repository. The use of platforms such as the Open Science Framework, Zenodo and preprint servers was limited, while open data repositories and AI-powered research assistants were used somewhat more often. These results supported the decision to include practical topics such as repository selection, data management plans, metadata, long-term preservation, preprints, AI tools and scientific visibility platforms. The candidates' self-reported needs also showed a clear demand for applied training. The most frequently indicated problems were related to the use of different digital tools, work with diverse data, general orientation in open science practices, independent research work, and the need to organize, document and share research outputs. The expected outcomes one month after the school included the ability to explain and document research choices, make more critical decisions about journals, repositories and platforms, use open science tools, and develop a concrete idea for applying open science in the participant's own doctoral work.

The preferred learning modes confirmed the value of the chosen format. The participants were interested in examples from different scientific fields, practical tools, concrete cases, discussion, demonstrations and comparison with other research situations. Therefore, the school was not organized as a purely theoretical event. It functioned as a bridge between policy, infrastructure and research practice, helping doctoral students understand how open science can be applied in concrete research workflows.

The training design also reflected an important institutional challenge. Open science infrastructures, repositories and policies can be effective only when researchers know how to use them and when they understand their role in the research process. For doctoral students this means not only awareness of open access, but also the ability to plan data-related activities, document decisions, select appropriate dissemination channels, and communicate research outputs in a transparent and responsible way. In this sense, the school supported both individual skills and the gradual formation of institutional routines.

At the time of preparing this publication, the follow-up mentoring programme and the collection and analysis of participant feedback were still in progress. For this reason, the present overview reports the structure of the school, the profile of the selected participants and the preliminary training needs identified before and during the event. The final evaluation of the school will require analysis of the feedback forms, mentoring outcomes and subsequent application of open science practices by the participants. Nevertheless, the first results indicate that the National Doctoral School on Open Science was an important step toward building sustainable open science competences among early-career researchers in Bulgaria.

PREPARATION OF THE BULGARIAN NATIONAL EOSC NODE

In 2026, the Bulgarian Open Science Portal (BPOS) team was selected to implement a project aimed at preparing the platform to become a candidate national node of the European Open Science Cloud (EOSC). The project, entitled “Preparation of the Bulgarian Open Science Portal (BPOS) to transition from a national open science

infrastructure to a candidate national EOSC node”, is funded under the Horizon Europe programme through the EOSC Gravity consortium. The project implementation period runs from 6 May to 6 November 2026.

The project’s objective is to establish the administrative, technical, and community foundations required for BPOS’s future candidacy as a national EOSC node.

Main goal: BPOS aims to become a coordination-centric node that allows onboarding of repositories and specialized services of Bulgarian RPOs within the EOSC thus contributing valuable research resources to the EOSC ecosystem.

Needs addressed: Bulgarian research community has been significantly underrepresented within the EOSC ecosystem so far – not for the lack of high quality research, but rather the lack of a national federated infrastructure to provide the necessary equipment, standards and support for RPOs and researchers to enter the EOSC Federation.

Key benefits: EOSC benefits from the expansion of geographical coverage in South-Eastern Europe and the integration of a significant number of research outputs from a broad national community into the EOSC ecosystem in an organized manner.

Researchers benefit from increased visibility of their work and the easier access to a vast catalogue of EOSC services via federated authentication. RPOs benefit from reduced technical and administrative burden, as BPOS will provide a single national access and aggregation layer that simplifies EOSC participation and supports institutions without local repository capacity.

Key outputs: The key output will be the Project Charter. Additional outputs include a capability mapping and gap analysis, one EOSC onboarding use case report, an EOSC Academy contribution matrix, stakeholder validation activities and a showcase presentation.

4. CURRENT STATE OF RESEARCH DATA IN BULGARIA (2026)

The National Centre for Information and Documentation (NACID) carried out between 15th April and 1st May 2026 a large-scale national survey on research data management practices in Bulgaria within the implementation framework of the “Open and Responsible Science in Bulgaria 2026” Program.

The scope of the survey covers research data generated and stored within higher education institutions and research organizations in the Republic of Bulgaria. The target group of the survey comprises researchers from higher education institutions and research organizations in the Republic of Bulgaria at all stages of their career development.

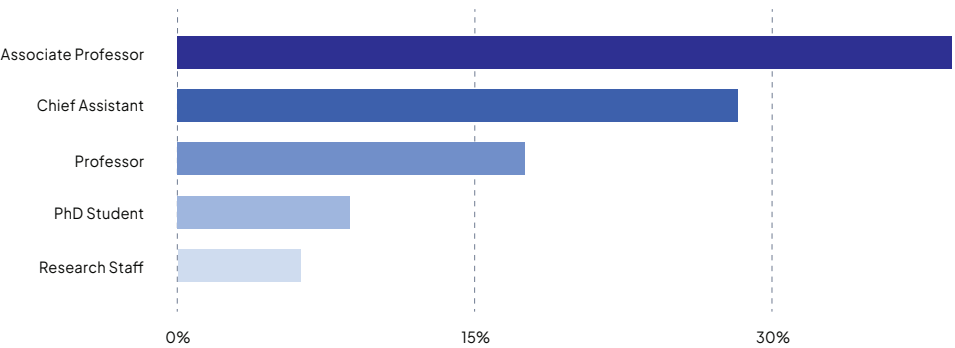
The survey focused on key aspects of research data management, including existing institutional policies, practices, infrastructures, and standards applied for the storage, sharing, and reuse of research data. The survey collected 1,101 valid responses from representatives of 48 higher education institutions and research organizations. The largest shares of respondents came from the Bulgarian Academy of Sciences (16.2%), Sofia University “St. Kliment Ohridski” (15.7%), and the Technical University of Sofia (12.8%). Although responses were somewhat concentrated within a few large research organisations, the sample covers a broad range of universities, research institutes, medical universities, and specialised higher education institutions. It can therefore be considered nationally representative with regard to the institutional diversity of the Bulgarian research system. The collected responses were analysed using:

- Descriptive statistics, including frequencies, percentage distributions, and averages;
 - Comparative analysis across scientific disciplines, career stages, and institutional types;
 - Correlation analysis to identify relationships between FAIR principles awareness, metadata usage, open access data publishing practices, and the availability of institutional infrastructure.
- Responses to open-ended questions were subjected to qualitative analysis through thematic grouping of similar views and the identification of key trends.

The sample is dominated by experienced researchers, with associate professors, senior assistants and professors accounting for the largest share of respondents. More than half of participants have over 15 years of research experience. This is important, because the findings largely reflect the practices and perceptions of researchers who actively lead projects, manage research outputs and shape institutional culture. At the same time, the relatively limited participation of doctoral students highlights the importance of strengthening Open Science engagement at earlier stages of academic development (Figure 8).

Career stage of respondents

The survey primarily reflects the practices of established researchers.



Research experience

Most respondents have substantial professional experience.

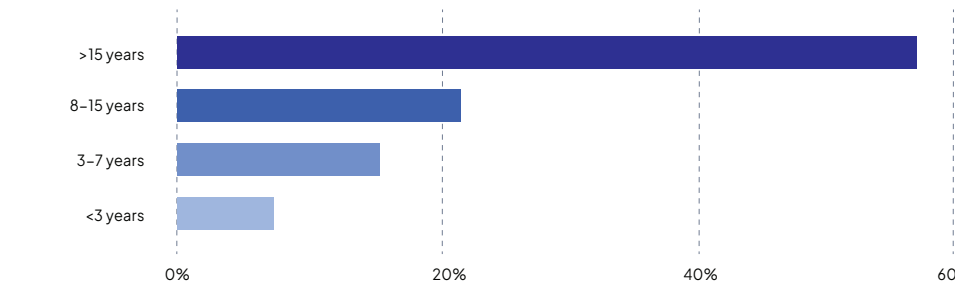
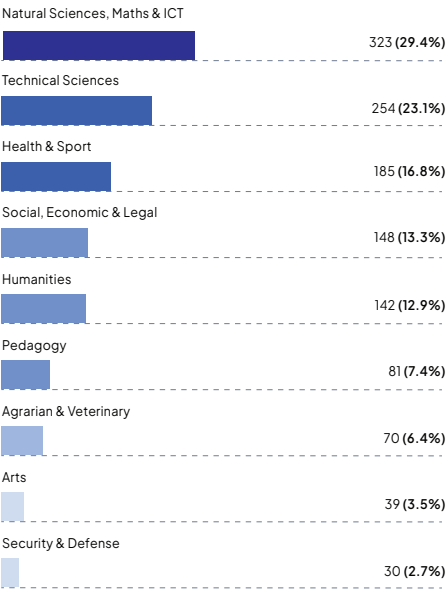


Fig. 8. Career stage of respondents and research experience, National survey of current state of research data 2026, NACID

The survey covers a broad range of scientific disciplines, with the strongest representation from the Natural sciences, mathematics and ICT (29.4 %), Engineering and technical science (23.1 %), Health and sport sciences (16.8 %). However, the survey also includes substantial participation from the social sciences, humanities, education and other disciplines. This indicates that research data management is no longer a niche issue affecting only data-intensive fields. Research data have become a strategic asset across most areas of research. Researchers work with a wide variety of data types, including documents, databases, images, laboratory records and software (Figure 9).

Scientific domains represented



Types of research data generated

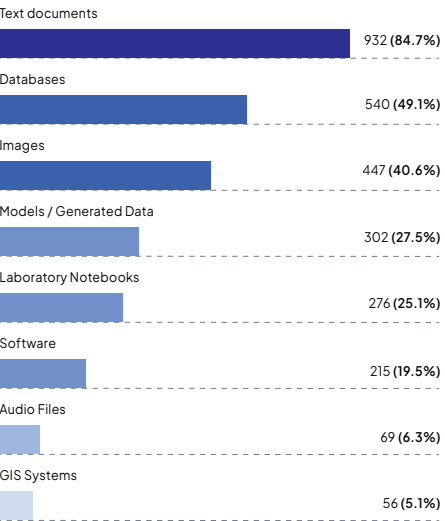
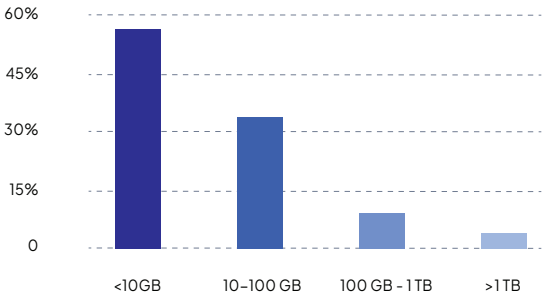


Fig. 9. Research areas and types of research data, National survey of current state of research data 2026, NACID

The survey shows, that most projects generate less than 100 GB of data, suggesting that many current needs could be addressed through relatively moderate infrastructure investments. At the same time, a large proportion of researchers preserve their data for more than ten years, demonstrating recognition of its long-term scientific value and the need for sustainable preservation solutions (Figure10).

Typical data volume per project

Most projects generate small or medium-sized datasets.



How Long researchers retain data

Long-term preservation is already expected by most researchers.

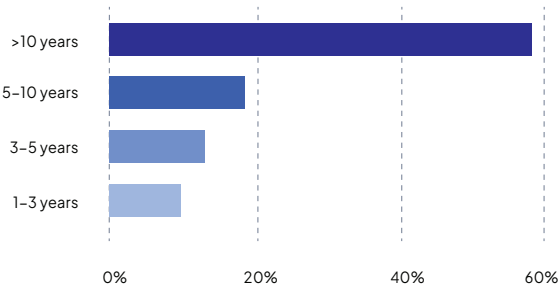


Fig. 10. Data volume per project and Retention periods, National survey of current state of research data 2026, NACID

However, the survey also identifies a structural weakness. Research data storage remains highly decentralised. Personal computers, external storage devices and commercial cloud services are the dominant solutions, while institutional repositories and dedicated infrastructures remain comparatively rare. This creates risks for long-term preservation, reproducibility and reuse. The findings suggest that one of the obstacles to sharing is the absence of infrastructure that is sufficiently trusted and widely adopted for managing data throughout its lifecycle (Figure 11).

Where researchers store data:

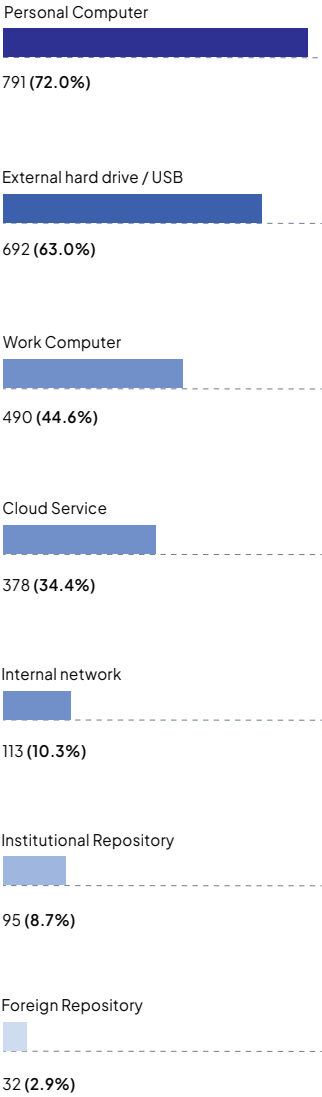


Fig. 11. Data storage, National survey of current state of research data 2026, NACID

An encouraging finding is the strong willingness of researchers to share data. Approximately three-quarters of respondents publish research data regularly or at least occasionally. Among those who publish, international repositories are the most frequently used mechanism, followed by the Bulgarian Portal for Open Science (BPOS) and institutional repositories. This shows that Bulgarian researchers are already familiar with repository-based sharing. The challenge that remains is to create conditions that make sharing easier, safer and more rewarding. It is worth noting here that BPOS currently lacks robust data storage capabilities, and only a small number of such files are available through it (Figure 12).

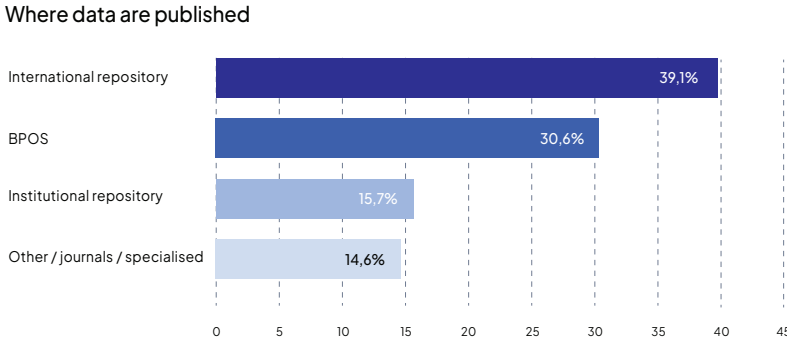
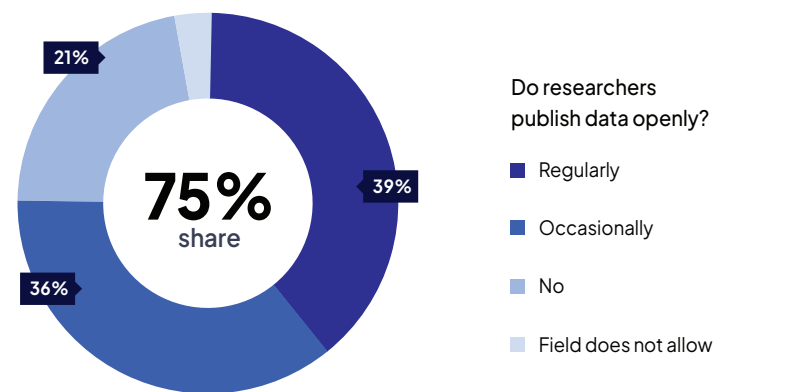


Fig. 12. Open Access Publishing, National survey of current state of research data 2026, NACID

The survey reveals a significant gap in research data management maturity. While 58% of respondents have prepared a Data Management Plan, most do so only when required by a funding organisation. More than 40% have never prepared one. This suggests that data management planning is still perceived primarily as an administrative requirement rather than as a standard research practice. The findings indicate that stronger guidance, tools and institutional support are needed to embed data management into everyday research workflows (Figure 13.)

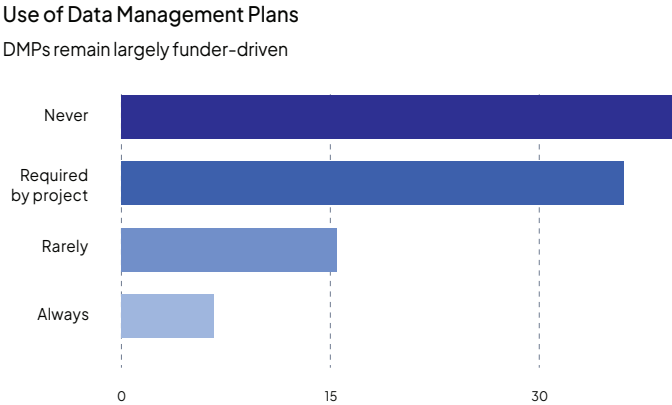
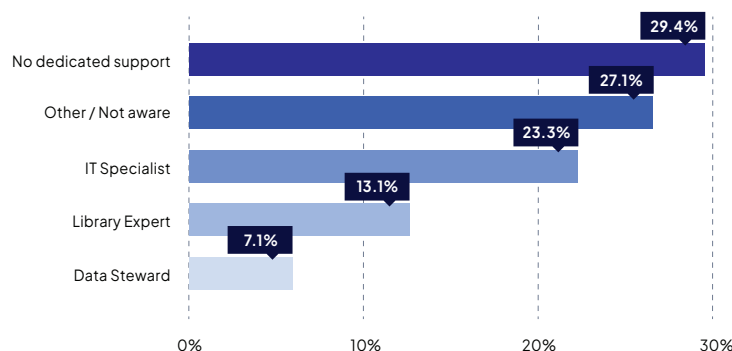


Fig. 13. Data Management Plans, National survey of current state of research data 2026, NACID

The survey also highlights weaknesses at the institutional level. More than half of respondents are unaware whether their organization even has a research data management policy.

Dedicated data stewardship roles remain rare, with support typically provided by IT specialists or library staff. This indicates that Bulgaria remains at an early stage in developing professional research data management support structures (Figure14).

Expert support for RDM



Knowledge of FAIR principles

FAIR literacy remains limited across the research community

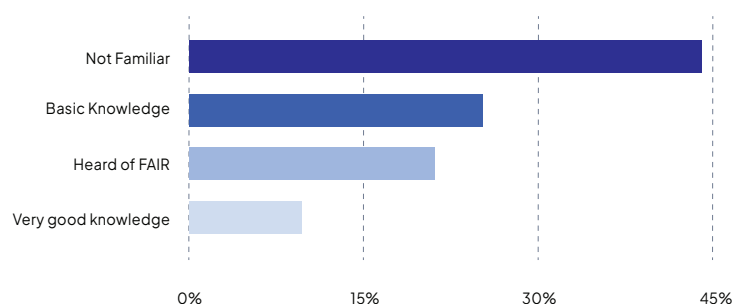


Fig. 14. Expert support and FAIR awareness, National survey of current state of research data 2026, NACID

One of the important findings of the survey concerns FAIR awareness. Only around one in ten researchers considers themselves highly familiar with the FAIR principles, while nearly half report no familiarity at all. Given that FAIR principles form the foundation of European and international research data policy, this represents a significant capacity gap.

Researchers were also asked what services would be most useful to them. The strongest demand was for long-term preservation services, followed by training, DOI assignment, secure storage, metadata support and integration with EOSC. The responses clearly demonstrate that researchers are not asking only for technology. They are asking for a complete ecosystem that combines infrastructure, expertise, guidance, legal certainty and international interoperability (Figure15).

Services requested by researchers

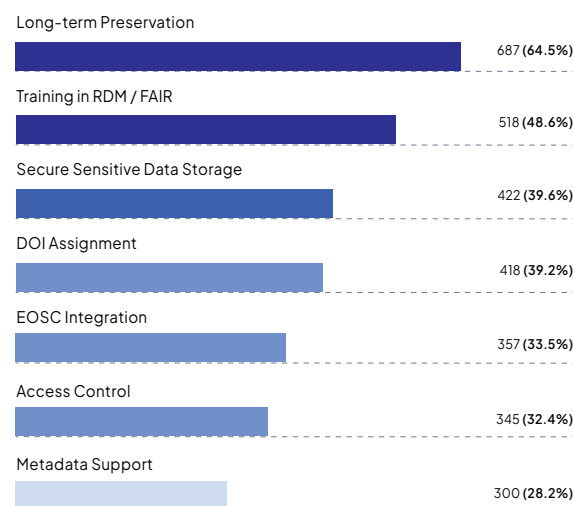


Fig. 15. Services needed for data management and sharing, National survey of current state of research data 2026, NACID

Free-text incentives for data sharing

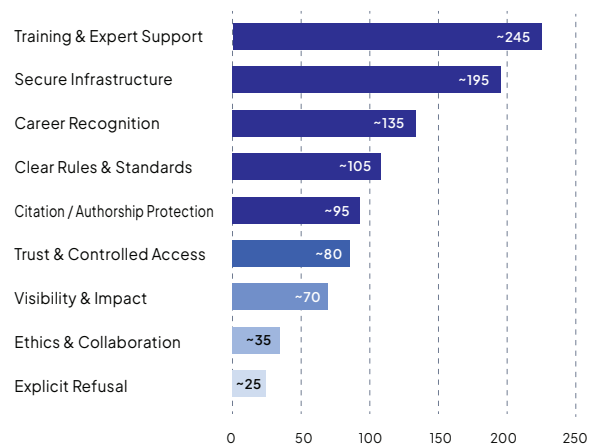


Fig. 16. Incentives, National survey of current state of research data 2026, NACID

The analysis of open-text responses reinforces this interpretation. Researchers consistently highlighted the need for training, practical guidance, trusted repositories, clearer rules and procedures, recognition of data-related work, protection of authorship and secure mechanisms for managing sensitive data. Importantly, only a small minority expressed outright opposition to data sharing. The dominant position was conditional willingness to share when appropriate support, incentives and safeguards are available. This is a crucial finding because it shows that the research community is largely ready to participate in Open Science if the necessary framework is provided (Figure 16).

Taken together, the results suggest three strategic priorities for Bulgaria. First, investment in trusted national and institutional research data infrastructure. Second, systematic development of FAIR and research data management competencies, particularly for doctoral students and early-career researchers. Third, stronger institutional governance through policies, support services and incentives that recognise data as a valuable research output.

In conclusion, the survey paints a picture of a research system that is ready to move forward. Researchers are generating data, sharing data and reusing data. What is missing is not motivation, but coordinated infrastructure, skills, support and governance. The evidence presented provides a strong foundation for national policies aimed at strengthening Open Science, improving research quality and ensuring that Bulgarian research data become a sustainable and reusable national asset.