Plan for Dissemination and Exploitation of Results

Deliverable D3.2

30 November 2021

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CETAF, AISBL

BiCIKL

BIODIVERSITY COMMUNITY INTEGRATED KNOWLEDGE LIBRARY

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Summary

On top of the BiCIKL Tool platform (delivered under T3.1), progress and achievements need to be widely disseminated in a structured and focused way. To that end, a Plan for the Dissemination and Exploitation of Project Results, the BiCIKL PDER (the present D3.2 documents), explains the major components of a comprehensive, continued and persistent dissemination effort and provides the framework for implementing the necessary actions. The PDER intends to identify the best use of tools (such as newsletters and press releases), and the most effective channels (social media, events, etc.), to address the target audiences identified with a double faceted goal: 1) to meaningfully communicate (both, internally and externally) the objectives of the project and the progress made over time, and 2) to substantially reach out potential users that sustain exploitation of the expected outcomes developed by the different Research Infrastructures involved in BiCIKL. Based on the logo, website, and branding elements of the BiCIKL project (D3.1), the PDER establishes the adequate containers of information, the suitable formats and the desired frequency of the communication activities The PDER also establishes Key Performance Indicators (KPIs) to measure effective progress. Still, the Plan is conceived as a lively document and a revision is foreseen to be held in month 24 (MS9) to provide a mid-term evaluation of the PDER implementation. The PDER gives special emphasis to engage with stakeholders and to attract new communities of users along the entire data life cycle. For that, a set of 4 expert round tables and 2 dedicated workshops are also integrated in the PDER as engagement mechanisms to a) foster collaboration across biodiversity-related infrastructures and communities of users of biodiversity data, and b) to facilitate moving jointly towards the Alliance for Biodiversity Knowledge (Alliance). The PDER envisages to produce policy briefings, reports and guidelines following the open science practices. Those outcomes will be also highly valuable for decision-makers, public actors, private entities and communities of practice beyond the scientific realm. The most relevant and impactful results will be gathered in a collection of articles, published in the Research Ideas and Outcomes (RIO) journal.

List of Abbreviations:

BGBM-Berlin	Botanic Garden Botanic Museum-Berlin
BKH	Biodiversity Knowledge Hub
BHL	Biodiversity Heritage Library
BiCIKL	Biodiversity Community Integrated Knowledge Library
CC	Creative Commons public domain
CC0	"no copyright reserved" option under CC
CC BY	Creative Commons Attribution License
CETAF, AISBL	Consortium of European Taxonomic Facilities, Association internationale sans but lucratif
CERN	European Organization for Nuclear Research

DiSSCo	Distributed System of Scientific COllections
DMP	Data Management Plan
EC	European Commission
EJT	European Journal of Taxonomy
ERIC	European Research Infrastructure Consortium
EU	European Union
FAIR	Findable, Accessible, Interoperable and Reusable
GBIC	Global Biodiversity Information Conference
GBIF	Global Biodiversity Information Facility
GDPR	General Data Protection Regulation
GeoBON	Group on Earth Observations Biodiversity Observation Network
HE	Horizon Europe framework programme
H2020	Horizon 2020 framework programme
IPR	Intellectual Property Rights
IUCN	International Union for Conservation of Nature
JRA	Joint Research Activitles
KER	Key Exploitable Result
KPI	Key Performance Indicator
PID	Persistent IDentifiers
PDER	Plan for Dissemination and Exploitation of Results
RI	Research Infrastructure
RIO	Research Ideas and Outcomes
SIB	Swiss Institute of Bioinformatics
TA	Transnational Access
TDWG	Biodiversity Information Standards
VA	Virtual Access

1. Introduction

A Plan for Dissemination and Exploitation of Project Results (PDER, the Plan) is, by nature, made up of two essential components: a) dissemination activities that aim to spread and share the results with potential users, and b) exploitation actions which drive to the further use of the project results by either policy makers, other scientific communities and/or private sector. Sharing and use of the outcomes of the project are to be combined to: 1) maximize the impact of the expected outcomes, 2) secure the access to the results beyond the project lifetime, and 3) contribute to further developments outside the project borders. In the case of BiCIKL, such a combination of elements is pivotal for sustaining, enlarging, and improving over time the new community that the project aims to build.

Therefore, the BiCIKL PDER is nurtured not only by the variety of insights provided by the partners to the project (as providers of direct primary information) but also from the potential users and relevant stakeholders. It is critically rooted on the type of results expected to be achieved with the different tasks carried out throughout the project. The Plan will be deployed on top of the categories, components, drivers, and potential communities of users to whom those results will be addressed.

2. Constituency of the Plan

The BiCIKL PDER is necessarily constructed based on critical pillars and supported by several guiding principles. However, the BiCIKL PDER is required to accommodate the different developments during the project. Therefore, the PDER Plan is presented as a starting point that will evolve as the information and knowledge around the results is produced by the partners, acknowledged by all interested agents, linked among others, within and outside the project, and organised in a structured, accessible, and efficient manner.

2.1. Principles of the Plan

A number of clear and very specific guidelines will lead the process of building the BiCIKL PDER. The Plan will adhere to the following principles:

- **precise and focused**, on expected results though those might be categorised as tangible and intangible results, direct and indirect;
- **comprehensive**, to include all parties involved (internal layer for Research Infrastructures involved in the project) and to consider potential communities of users and stakeholders (external layer);
- **balanced** between openness and security (as open as possible, as close as necessary), taking into account commercialization and Intellectual Property Rights (IPR), privacy concerns (such as GDPR), security as well as other data management and preservation questions;
- **flexible and adaptable**, to be reviewed and adjusted as the project progresses (review to be done by month 24 of the project);
- **feasible and effective**, with the application of adequate means considering the available resources;

- **impact oriented**, to seek the most effective and meaningful impact on science and society.

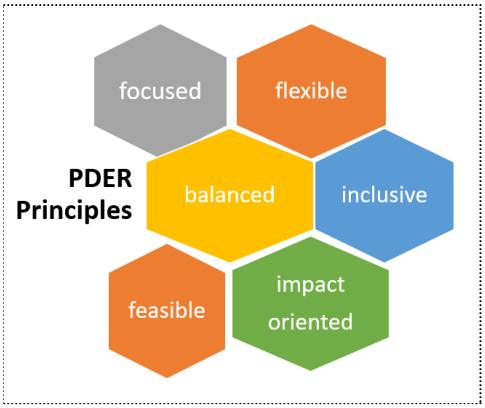

Fig. 1: Principles of the PDER.

Additionally, all material that will capture the content of the results produced by BiCIKL have to be driven by several criteria to ensure that we communicate effectively, disseminate largely, and facilitate exploitation of results to its largest extent. To that end, we need to:

- produce **clear messages** to use through which potential users of the BiCIKL results may gain a clear and informative idea of their content, usefulness, accessibility, and functionalities;
- foster **engagement with stakeholders** and potential users of the BiCIKL results;
- diversify across a varied set of **appropriate tools and channels** (see Table 2 below) to address targeted audiences and reach out to a wide diversity of users' communities;
- utilize **suitable formats** (press releases, images, tweets) to ensure effective communication, maximize reach and optimize use of available resources;
- secure easily **findable, open and free-of-charge** access to BiCIKL results, and
- **monitor performance** with measurable metrics for assessing the reach and success of the PDER's actions.

2.2. Components of the Plan

The BiCIKL PDER encompasses two critical activities in relation to the expected outcomes to be achieved by the participating Research Infrastructures (RIs) during the lifetime of the project, i.e.:

1. Dissemination, and
2. Exploitation

Though closely related, and sometimes misunderstood, each of those activities serves a different set of objectives.

Dissemination of results implies the facilitation of the necessary tools, mechanisms, and platforms where the results are shared and become accessible. By its own nature, intermediate results, milestones, and those reports and/or outcomes still considered as "work in progress" are exclusively available to the project partnership and for that, they will be allocated in the platform(s) used for internal communication. On the contrary, the results of the project once produced, reviewed internally, and assessed as final, will be uploaded in as

many platforms and repositories as necessary to secure open and wide accessibility to the results obtained.

Dissemination is supported by communication, and for that it will make the best use of the tools described in the Communication Strategy (Milestone MS7). Communication efforts are intended to, on the one hand, facilitate efficient exchange of information among project partners, strengthen coherence and enlighten the shared vision towards the further dissemination of results (internal communication). On the other hand, communication aims promote the action and its results, by providing targeted information to the media and the public (external communication).

Exploitation of results refers to the capacity of reaching out the audiences targeted as potential users of the outcomes produced by the project. The results will be made available openly outside the consortium once they are final. The results will be valuable for different audiences depending on their performance and their category. As an example, a prototype of a platform might be of interest for certain software developing companies while it might not be so meaningful for citizen scientists, at this stage.
From the above, the PDER gathers both categories in a combined strategic document. It essentially describes the basic components to be used for first sharing and then reaching out the expected results of the project. The components are intrinsically related and influence each other on an information cycle guided by the PDER.

Such a cycle includes:

- the identification of **project outcomes,**
- the description of **best tools**,
- the recognition of most **effective channels,** and
- the categorization of **detected audiences**.

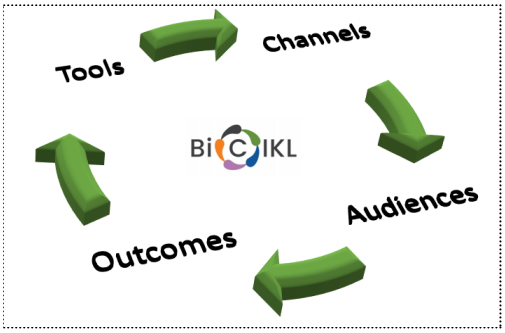

Fig. 2: Components of the PDER content cycle.

2.3. Supporting elements to the Plan

Outside the Plan itself there are several other elements on which the PDER anchors and that similarly support the course of the actions and activities undertaken. They are listed within the List of Annexes to this document as follows:

Annex 1: The BiCIKL Communication Strategy (MS7)
Annex 2: The Data Management Plan (D12.9 DMP)
Annex 3. The Open Access framework and guidelines for publications and data
Annex 4: The List of Project's Deliverables

3. Building the BiCIKL PDER

3.1. Capturing information

To identify the PDER for BiCIKL and establish meaningful connections among the different components of the Plan, it has been necessary to create a preliminary draft of the composition of the Plan through a **research and analysis** of existing similar initiatives. Once realized, the set of results expected from the project needed to be identified and for that end, a **survey** was launched and circulated among the project participants, namely the RIs involved in BiCIKL.

3.1.1. Research and analysis

Analysis of similar endeavours have been carried out to:

- ensure no critical elements are missed,
- articulate the Plan in a harmonized format (regarding similar efforts done by other communities and initiatives) to facilitate comparison and aggregation, should this be necessary at later stage,
- capture innovative structures and workflows.

3.1.2. Survey

On top of the acquired knowledge of the state-of-the-art, it was decided to implement the structure of the PDER to the specific community of BiCIKL. To that end, a comprehensive survey was launched with a set of questions precise, focused, and relevant to the expected outcomes.

From the global RIs involved in the setting up of BiCIKL community, a set of project partners were consulted (see Fig. 3):

	Acronym	Title	Country	website
1	ELIXIR	RI for life science information	IO	https://elixir-europe.org
2	DiSSCo (Naturalis)	Distributed System of Scientific Collections	NL	https://dissco.eu
3	Pensoft Publishers	Academic company for scientific publishing	BG	https://pensoft.net
4	BGBM-Berlin University	Botanic Garden Botanic Museum	DE	https://www.bgbm.org
5	Species2000	Federation of taxonomic database custodians	UK	https://www.sp2000.org
6	TDWG	Biodiversity Information Standards	BE	https://www.tdwg.org
7	Zenodo(CERN)	European Organization for Nuclear Research-CERN Data Centre	IO	https://zenodo.org
8	GBIF	Global Biodiversity Information Facility	DK	https://www.gbif.org
9	Plazi GMBH	Digital taxonomic literature repository	CH	https://plazi.org
10	PlutoF-Tartu University	Biodiversity platform	EE	https://plutof.ut.ee
11	SIB	Swiss Institute of Bioinformatics	CH	https://www.sib.swiss
12	LifeWatch ERIC	e-Science Infrastructure for Biodiversity and Ecosystem research	ES	https://www.lifewatch.eu

Fig. 3: List of the RIs involved in the Survey.

The Survey had a 4-folded objective:

- Compile the set of expected key exploitable results (KER)
- Identify the related targeted audiences
- Contribute to identify mechanisms for exploiting BiCIKL KER results
- Support potential linkages among results through the Biodiversity Knowledge Hub

The Survey (attached as Annex 5) was launched as a Cognito form with 13 Questions that were distributed across 3 sections:

1. Dissemination of results;
2. Exploitation of expected BiCIKL results;
3. Whenever possible, intangible impact of BiCIKL results.

3.2. Outcomes to disseminate / exploit

As per the Survey conducted, we can conclude the following categories of results:

3.2.1. New tools and mechanisms:

Tools: 13 new tools developed (e.g novel publishing tools; annotation tool).

Workflows: 12 new described workflows and connectivity schemas (e.g. for structured, standards-aligned content in data publishing; functional links between specimens and other data classes; others).

Web-based tools/databases: 9 new databases (e.g transnational and virtual access to biodiversity infrastructures and services; bidirectional cross-references between the literature and structured biological databases).

3.2.2. Policies, procedures, and standards:

Policies: new 6 comprehensive policies (e..g delivering unified taxonomic data services to various research infrastructures; harmonization of sequence related metadata).

Standards: 5 new categories (e.g through the new PID infrastructure).

Guidelines and recommendations: 6 new guidance documents (e.g. on how "bidirectional" linking is done upfront; standardized mechanisms for retrieving specimen links from sequences).

3.2.3. Innovations / solutions /upgrade

Solutions to technical problems: up to 90% (e.g. Federated FAIR data system through aligned identifiers; Access for mining and querying the literature based data; permanent repository to redistribute, archive, preserve, and cite objects: treatments, images and physical specimens).

Development/upgrade of current services: 80% (e.g. ELIXIR Contextual Data Clearinghouse for the reporting of source material annotation gaps and inaccuracies)

3.2.4. Reports:

Reports/scientific articles: up to 80% of the outcomes will derive in scientific papers.

Policy briefings and guidelines: The analysis of the responses show the Key Exploitable Results (KER) identified by partners (Fig. 4).

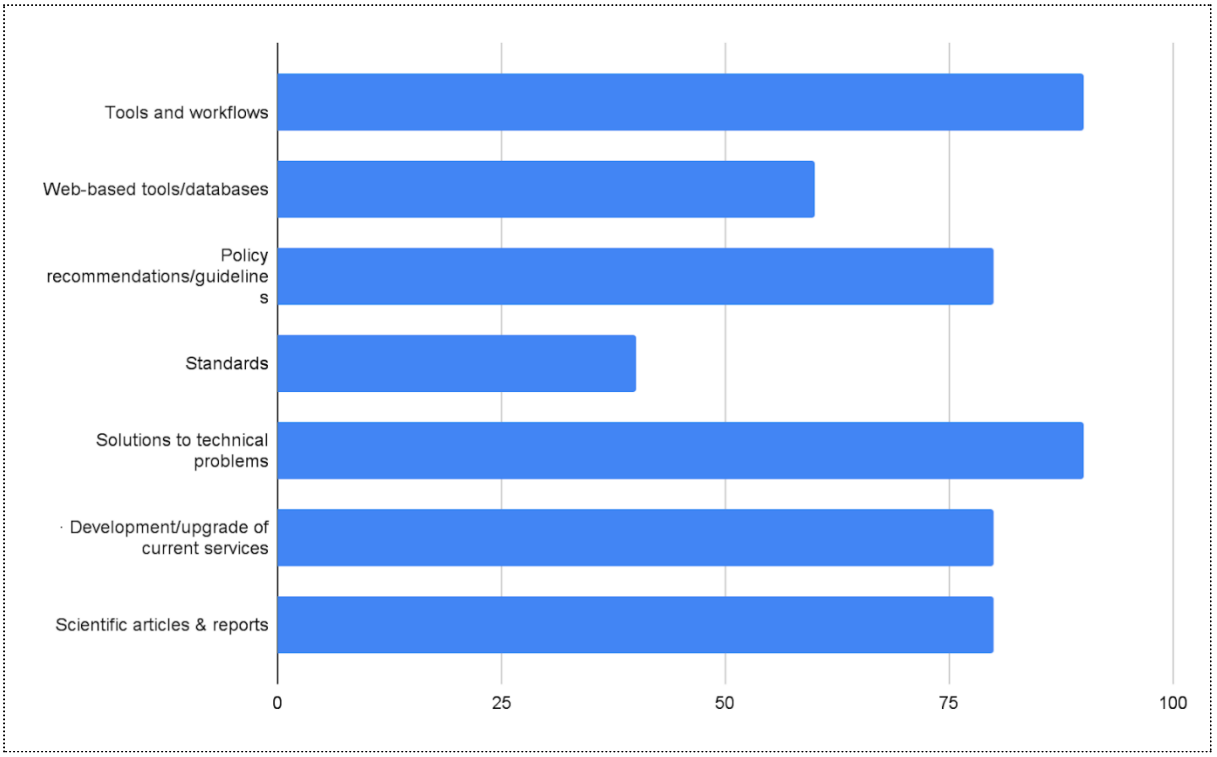

Fig. 4: Type of Key Exploitable results (KERs) (%), identified across 9 WPs.

3.3. Defining Audiences

The BiCIKL dissemination activities will target the project's stakeholders and potential users by supplying timely information about access to project tools, developments and outcomes.

Dissemination necessarily works closely with communication actions since the latter intend to raise awareness of the importance of the project's progress towards achieving positive socio-economic impacts. Project communication further supports dissemination activities by multiplying messages and enlarging the recipient's base.

Both, communication and dissemination, need to be tailored and adjusted to the needs of the potential audiences of the messages delivered. In that regard, both components of the PDER work together to provide timely information and access to relevant outcomes of the project, to

two differentiated levels: 1) internal (partners and related RIs) and 2) external (from policy makers, media, private sector and general public at large).

Moreover, the information collected in the Survey has been analyzed in the light of the Communication Strategy (Annex 1), which was delivered as a Milestone (MS7) on 27th October 2021 and that forms an integral part of the current PDER. This Communication Strategy of BiCIKL also follows the principles outlined in the recently published official European Commission (EC) Guidance: Social media guide for European Union (EU) funded R&I projects (EC 2020).

In relation to Audiences, based on the survey conducted, we can identify the following ones that are better defined below:

- Researchers (R);
- Decision Makers (DM);
- National Authorities (N);
- EU Authorities (E);
- Interested Organisations (O);
- Industry (I).

They are represented in the Fig. 5 below, in terms of their prioritization made by the different RI (in percentage):

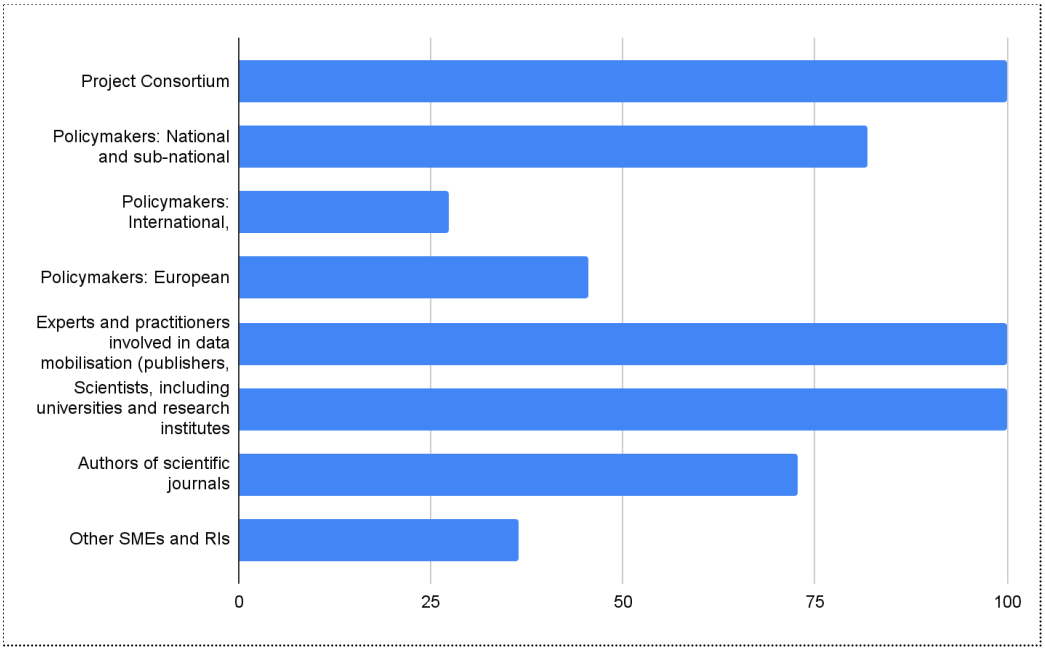

Fig. 5: Priority (%) of target groups identified by the RIs.

Moreover, we can differentiate a first category (a) of types of audiences, based on their direct or indirect influence and interest, i.e. which are the audiences directly targeted either because they have a natural interest in the results (our related scientific community) or more importantly, because they influence and have a say in the development of the BiCIKL expected products (as it is the case of the related RIs and stakeholders from private sector). Similarly, we recognize the same type of audiences as either external or internal to the domain, under category (b):

Category (a)

Direct (influence/interest)

- researchers within our scientific community (R)
- related RIs and interested organizations (O)
- industry and private sector (I)

Indirect (influence/interest)

- decision makers (DM)

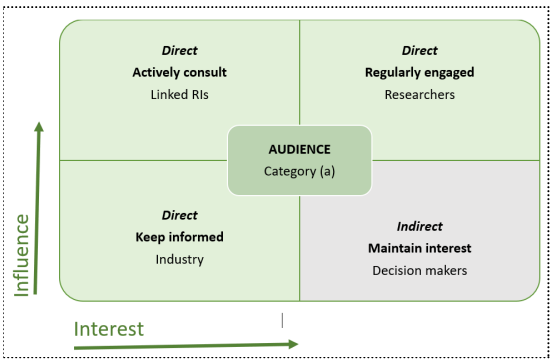

Fig. 6: Matrix for target audiences in category (a): Direct and Indirect.

Category (b)

Internal (to the domain)

- researchers within our scientific community (R)
- related RIs and interested organizations (O)

External (to the domain)

- decision makers (DM)
- public actors, national and EU authorities (N/E)
- industry and private sector (I)

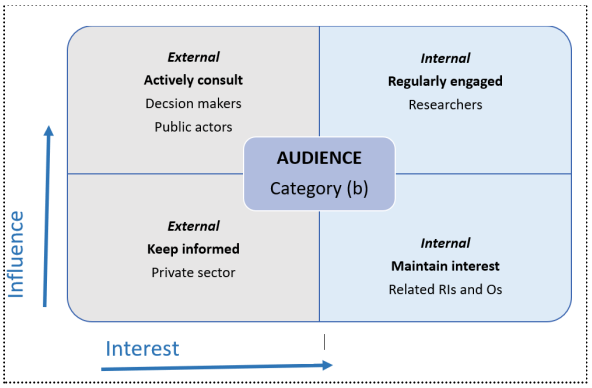

Fig. 7: Matrix for target audiences in category (b): Internal and External.

Each of them may require different messages and actions.

3.3.1. Main axes of action for the BiCIKL PDER

The Plan results fall under the following 5 areas, as per the matrix that considers interactions between:

- Type of action (dissemination/exploitation)
- Audience targeted

From such combination, the actions of the PDER refer to:

1. Dissemination of results to science (research peers, related RIs)
2. Dissemination of results to society (public actors)
3. **Exploitation of results by research community (internal and external users)**
4. **Exploitation of results by commercial users (industry and private sector)**
5. Trans-sectional area that combines dissemination and exploitation of results (by policy makers)

The expected review to run during the second year of the BiCIKL project will provide information on the content under each of those areas.

Due to the specific nature of the BiCIKL project, that aims to set-up the basis for the running and operation of a new community created around the data life cycle, special emphasis is to be given to engaging with stakeholders (axes 4 and 5 of above). This priority audience to be tackled stems from the combination of being an external actor while still having a direct impact and a potential involvement in the development of the results. Similarly, the exploitation of results by internal (to the project) and external communities of users need to be complemented by the desirable engagement of the private sector in the co-creation of new products and innovations.

To ensure this involvement and engagement takes place, becomes part of a recurrent forum and conducts fruitful discussions, the PDER considers a specific instrument: the experts round tables (for tackling Virtual Access field, WP5 and contributing to JRA activities (WP6, WP7, WP8, WP10 and WP11) will be organised to collate expert advice from non-academic stakeholders, including industrial actors and to foster cross-disciplinary fertilisation (which outcomes will be gathered under a joint report MS13). Additionally, two focused presentations/workshops to targeted audiences (i.e. RIs under WP2 and WP3 and publishing-related actors under WP3 and WP4) will be organised (milestones MS10 and MS11). All these engagement mechanisms will work towards the Alliance for Biodiversity Knowledge (Alliance) (arising from the Second GBIC Conference in 2018), to facilitate collaboration across biodiversity infrastructures and communities.

Furthermore, the added value of the new community over the sum of the existing services, besides the improved access at each stage of the data and research life cycle, will be the provision of a single knowledge broker, the Biodiversity Knowledge Hub (BKH), to interlinked, machine-readable, Findable, Accessible, Interoperable and Reusable (FAIR) data connecting specimens, genomics, observations, taxonomy and publications. The BKH will become instrumental in both, advancing the Alliance approach and thus consolidating the growth of the new community. The project aims to deliver, under the BKH, a set of best practices and models for collaboration at all scales across different fields of interest, among others, in biodiversity informatics.

3.4. Describing tools and channels

3.4.1. For Dissemination

Disseminating and thus, sharing information is more than a need. It stands as a requirement for effective collaboration and meaningful partnership.

As established in the BiCIKL Communication Strategy, there are two levels of communicating and sharing information: a) internally, among partners (including Advisory bodies to the project), and b) externally, to any other third party, outside the project partnership.

- *Internal communication platform*
  For internal purposes, **Teamwork** is the basic tool used for sharing documents and enabling all partners to have a close follow-up of the project. The fluent and recurrent access to this platform stimulates participation, foster engagement, allows collaborative work and secures access to updated information in all tasks and regarding Milestones and Deliverables. It stands also as a communication channel (through emailing service) and as a file storage.

  The platform was set-up in M1, at the very beginning of the project lifetime (more extensive description of the Teamwork functionalities are included in the D12.6 Internal Communication Platform).

- *Website*
  When referring to external communication, the BiCIKL Communication Strategy establishes several mechanisms and tools that together constitute the window through which external interested parties may acquire knowledge about the project (BiCIKL website) and equally provide feedback (through social media accounts).

  The public BiCIKL website (Fig. 8), available at URL: https://bicikl-project.eu/, was launched in M3 and has been permanently fed with news and updates related to the project and the BiCIKL expanded community.

  News, events and updated information will be provided by the project partners to nourish this online platform, and will subsequently be collated, filtered and published by the BiCIKL Coordinator, as to maintain the usability and relevance of the website at a high standard. All materials will be published in a timely manner and updates will be made on a regular basis (whenever crucial and relevant and, at least, once every two weeks) and made accessible to the public.

  All expected outcomes to be achieved throughout the BiCIKL project will have their space at the project website and will be widely announced through this media. The RIs involved consider this mechanism as one of the most impactful means to disseminate their developments and final achievements. On top of that, the RIs are committed to use their institutional websites to promote and further echo the results obtained. The list of the websites of the BiCIKL involved RIs is included in Fig. 1 above. Others, within the environmental domain, will also be tackled such as ENVRI (https://envri.eu/).

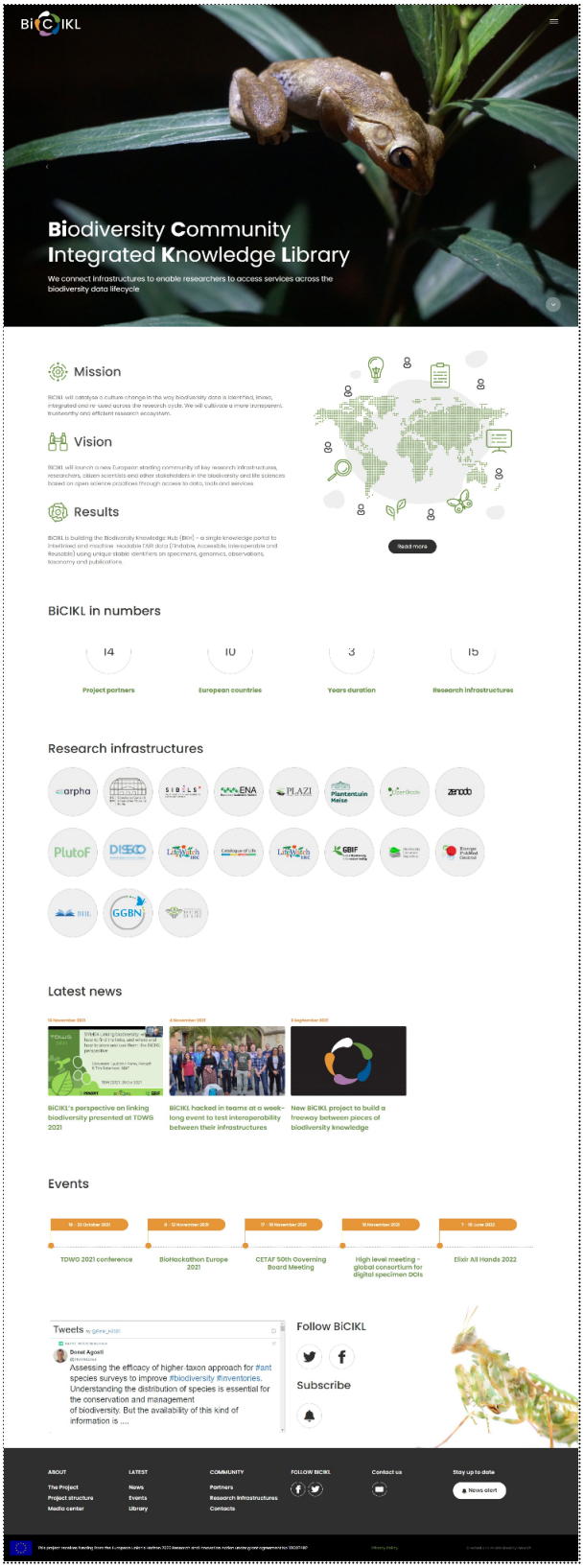

Fig. 8: BiCIKL website https://bicikl-project.eu/ Home page.

- *Social media*
  Specific social media channels operate to engage a broader public. Accounts have been set up for BiCIKL on Twitter and Facebook and messages will be regularly placed on both, tailoring the content to the respective channels and respecting its specifics. Twitter is considered to be more effective, especially for a scientific audience, while Facebook is considered more suitable for longer and more informative posts. The existing audiences of the partners' social media channels (e.g. ELIXIR, GBIF, Zenodo, LifeWatch, CETAF) will be called upon to view and share the content produced by the BiCIKL social media and thus contribute to its greater impact.

  The BiCIKL's Twitter account (@Bicikl_H2020) (Fig. 9) and related hashtag (#BICIKL_H2020) were announced well before the beginning of the project to draw in the project partners and their communities.

  It is worth noting the high-level engagement with social media (specifically Twitter) shown by the RIs involved in BiCIKL. As per the Survey conducted, 100% of the RIs involved consider the use of Twitter as a recommended mechanism to largely disseminate the expected results. Furthermore, the researchers involved in BiCIKL will make use of their personal (as well as institutional) social media accounts to reinforce the message and the dissemination of results.

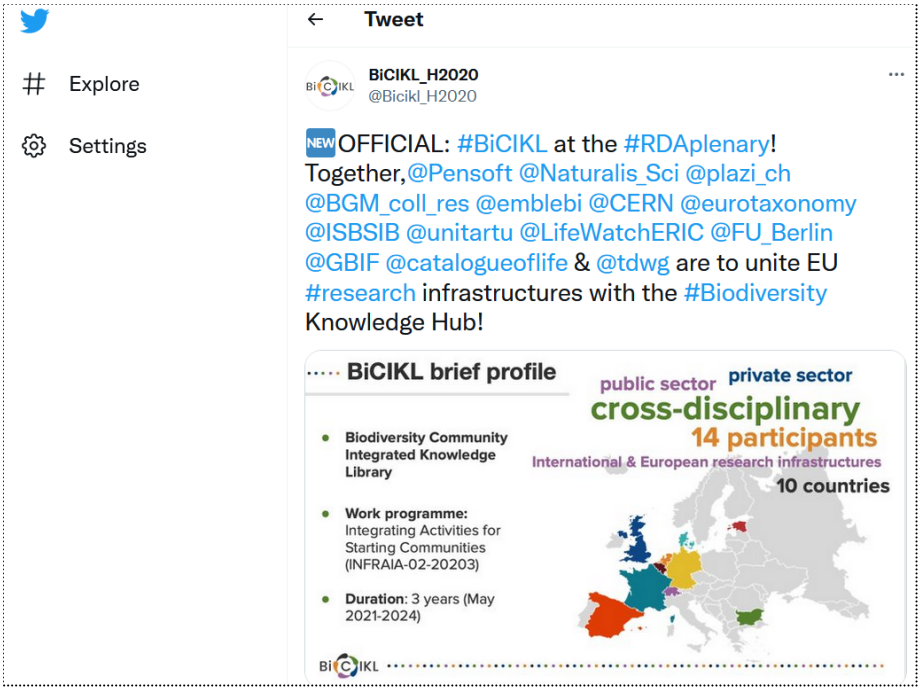

Fig. 9: Example of BiCIKL Twitter messages.

- *Newsletter*
  With a bi-annual periodicity, the BiCIKL newsletter intends to cover the major topics and issues concerning the project progress. It will also include references to key events and/or initiatives that may influence and affect the development of the BiCIKL community and on which we have a high level of interest.

Note: As per the Survey conducted, 81% of the RIs involved will use the newsletter to publish their outcomes and results.

- *Press releases*

Reaching out to broader audiences, the use of Press releases is equally considered as a way to drive attention to certain issues and topics of special relevance and thus, instigate changes and actions on specific topics. Several platforms are to be used and more specifically:

- EurekAlert
- AlphaGalileo

All the RIs partners to the BiCIKL project consider press releases as a useful tool and will promote the release to media of focused, concrete and impactful messages that could capture attention from different audiences, also outside the scientific communities.

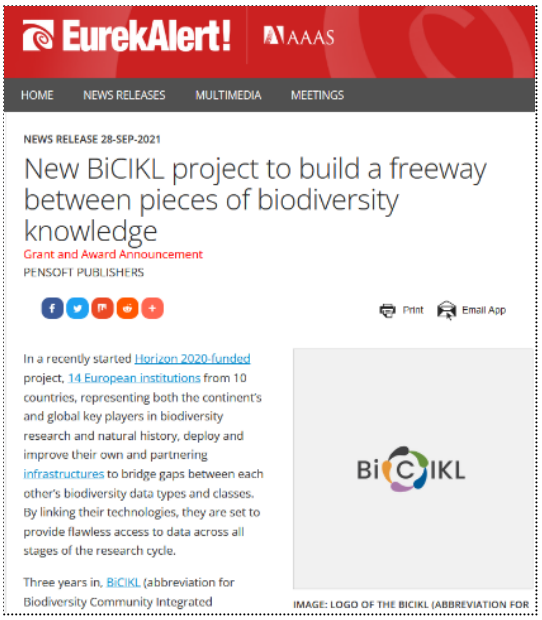

Fig. 10: BiCIKL press release in EurekAlert!

- *Promotional material*

Promotional materials are considered essential, to foster the visibility and recognisability of the BiCIKL project, encapsulate right messages, to foster a sense of community, and to direct attention to key topics. These materials will be available to partners both in digital and print format. They will contribute to establish BiCKL as a well-recognized brand, and provide a simple though comprehensive overview of what BiCIKL means for the life/natural sciences and how the completion of the data life cycle may exponentially increase the impact of the individual data when provided in isolation.

The project has produced a Poster, Brochure and Sticker (Fig. 11) and will promote the use of the BiCIKL branding in all other actions undertaken for dissemination and exploitation of results.

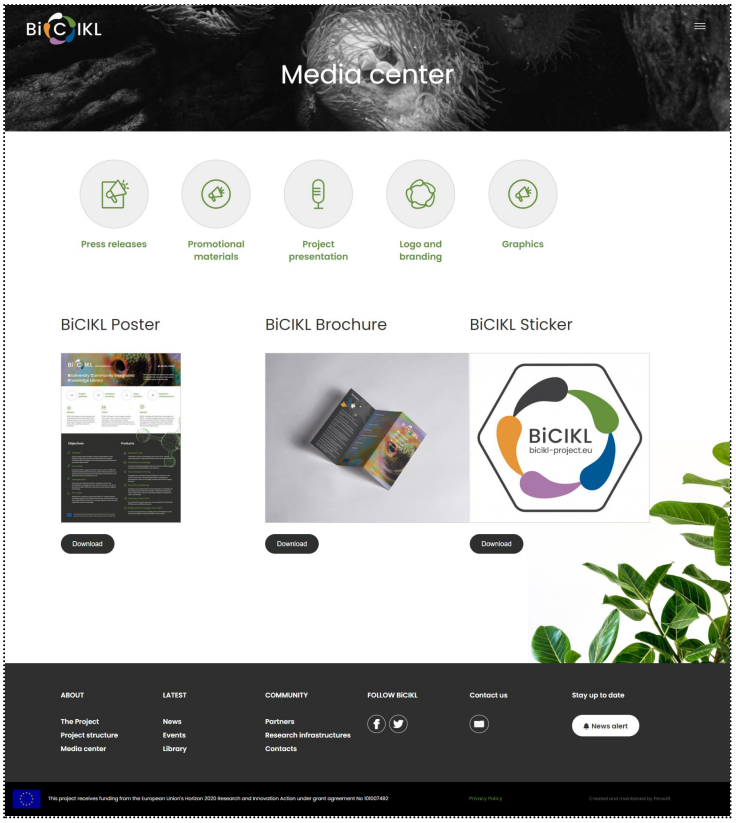

Fig. 11: BiCIKL poster, brochure and sticker available in the 'Media center' on the BiCIKL website.

Altogether, the communication results are regularly published at the BiCIKL website, through the **media center**.

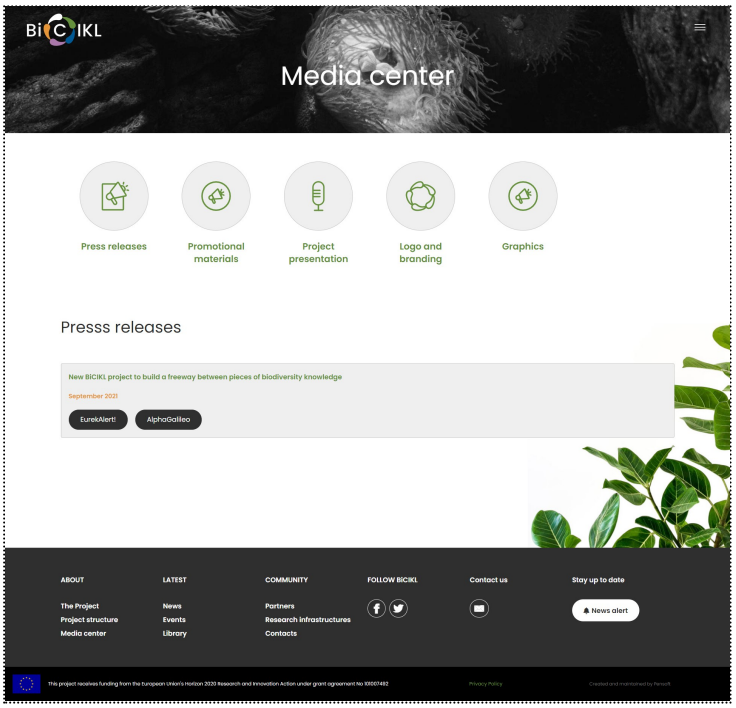

Fig. 12: BiCIKL webpage 'Media Center'.

- *Events and conferences*
  Participation in events will be encouraged. Partners may either attend them directly through its partnership by means of designated representatives (virtual or physical), or participate with presentations, posters, joint booths, etc. if deemed beneficial for the project's success.

  The Survey results show that 100% of the RIs involved in BiCIKL consider participation in related events (from workshops to summits) an impactful mechanism to disseminate results and create the grounds for a fruitful collaboration that could end in a stronger cooperation for the exploitation of results.

  Over 75% of them refer to the active participation of BiCIKL in events of related initiatives, as in the General Assemblies of TDWG, GeoBON, GBIF, etc.

  A presentation template (Fig. 13) has been generated to support the BiCIKL presence in any external event or forum.

Fig. 13: BiCIKL project presentation, available on the BiCIKL website.

3.4.2. For Exploitation

In addition to the Dissemination of the BiCIKL results for which different tools and mechanisms are to be thoroughly and extensively used (as detailed in the section above), the exploitation and use of expected outcomes of the project requires a different set of mechanisms that will facilitate not only reaching out to broader audiences. They are intended to also foster engagement, raise awareness among different communities of users and support sustainable collaboration over time, also beyond the project lifetime.

In this respect, almost 60% of the RIs participating in BiCIKL consider that their outcomes are exclusively related to the project. However, they claim to stimulate its dissemination and to allow their exploitation by users and communities outside the realm of BiCIKL partnership.

For that, a set of Round Tables and dedicated Workshops are to be scheduled throughout the project, as a specific and focused instrument to address the need of engaging stakeholders and users' communities outside the project partnership but still linked to the data life cycle.

The final aim is to engage new members to the consortium by clearly highlighting the added value of the new community on its different dimensions for the stakeholders.

Another important feedback received from RIs is the set of topics that could be highlighted and be focused at the discussion forum (Round Tables and Workshops) that are to be organized under BiCIKL. In that respect, the RIs involved in BiCIKL consider of special importance several issues that will come out of the project and that will certainly support the interconnection of stakeholders (and their data) in the consolidation of the data life cycle operation:

- Use of FAIR data by RIs across domains and disciplines
- Linkages between different types of data
- Methodologies to ensure meaningful interconnections among RIs
- Cross-referencing of data

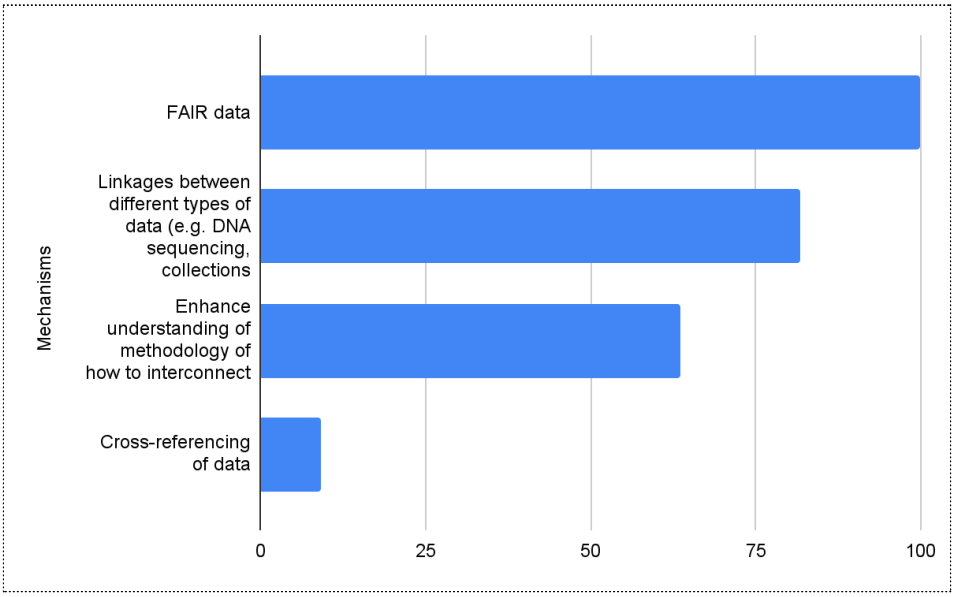

Fig. 14. Importance (%) of BiCIKL results to improve interconnection of data in the data life cycle.

- *Expert Round Tables (RTs)*

  A set of **four (4) RTs** will be scheduled to discuss specific topics. Those will be run and convened by technical WPs with the support in their organisation from the leaders of WP11 and WP3 (Pensoft and CETAF respectively).

  The RTs are intended to be a forum of discussion to gather feedback from experts in the field in relation to each of the specific streams of work (Access and JRA) identified in the project. As already mentioned, the outcomes of these RTs will be gathered under a joint report MS13, that will showcase the importance of the users' communities in the co-creation and co-development of scientific activities. To that end, different stakeholders, including the private sector, will be called upon to participate in RTs.

  The WPs involved in the organisation of the RTs are:

  - **Access**, both transnational (TA) and virtual (VA), under WPs 4 and 5,
  - **Research activities** (JRA):

- WP6: Liberation of data from literature, next-generation semantic publishing and delivery of FAIR data
- WP7: Providing core access services and FAIR data on specimens and samples
- WP8: A data foundation for connected molecular, natural history collections and taxonomic data
- WP10: Delivering a trusted and evolving taxonomic framework for data integration
- WP11: FAIR Data Place: linking, finding and access

- *Dedicated Workshops*
  Two (2) Workshops will be organised to specifically tackle target audiences. The organisation and outcomes obtained from these two events will nourish the Milestones MS10 (in month 24) and MS11 (in month 28).
  - First Workshop will gather **RIs engaged** in WP2 and WP3 (LifeWatch, GBIF, ELIXIR, TDWG)
  - Second Workshop will involve **publishing-related** actors (Pensoft, Zenodo, Plazi),

- *BiCIKL Collection in the Research Ideas and Outcomes (RIO) journal*
  Exploitation entails reuse of the outcomes of the information, documents and elements produced by the project. To that, both the project proposal and project public deliverables will be published in a BiCIKL collection in **RIO journal** (see Topical Collections: BiCIKL, https://riojournal.com/topical_collections, "Towards interlinked FAIR biodiversity knowledge: The BiCIKL perspective").

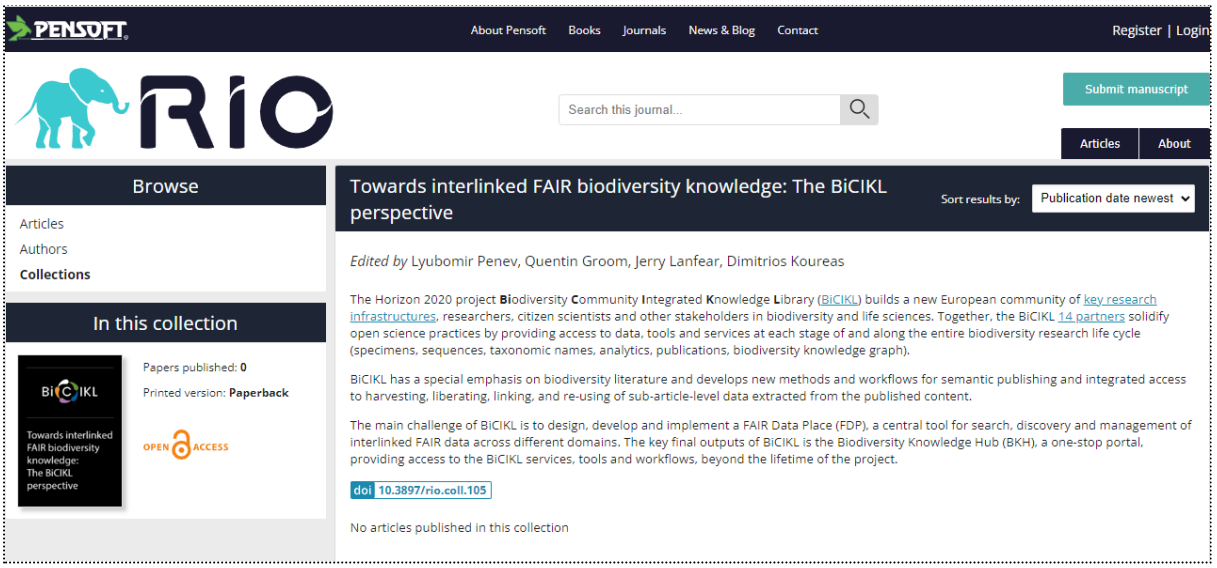

Fig. 15: BiCIKL Topical collection in RIO journal.

- *Other scientific journals*
  Equally, partners to the project will be encouraged to publish scientific papers in peer-reviewed journals (e.g. European Journal of Taxonomy-EJT and others).

  Scientific papers and articles are considered as a highly valuable outcome from BiCIKL by 3 out of 4 RIs involved in the project. Those commit themselves to the publication

of meaningful papers that could have an impact on current state-of-the-art in relation to the potential of combined data from life and natural sciences together with other data and metadata. Special reference is made to publishing in Biodiversity Data Journal (Pensoft).

- *BiCIKL Biodiversity Knowledge Hub*
  BiCIKL will address the full range of relevant end users and groups through the BiCIKL Biodiversity Knowledge Hub (BKH). This platform will provide dynamic support and instrumental means for communication and dissemination both in and outside the BiCIKL community. It will facilitate dissemination of project outputs by creating a hub to publish and promote project reports, scientific papers, policy briefs, press releases with linkages to other web-enabled communication channels and data sources (e.g. partner, actor group, or EU project websites, etc.). The platform will also be used to link to open-source developments within BiCIKL, and to advertise for open source contributions from stakeholders (both internal and external).

- *European Commission services*
  Furthermore, other repositories of special relevance could be used as the hub provided by the Biodiversity Knowledge Center and more importantly, others facilitated by the European Commission, free of charge:
  - CORDIS. For further guidance, see the fact sheet published by the EU intellectual property rights (IPR) Helpdesk
  - Open Research Europe platform: An open access, publishing platform for scientific papers for Horizon 2020 and Horizon Europe beneficiaries, including an open peer review and article revision.
  - Horizon Results platform: A platform for showcasing research results, finding collaboration opportunities, and getting inspired by the results of others.

  If necessary and applicable some services could also be used to allocate BiCIKL results and channel them towards the private sector:
  - Horizon Results Booster: Free consulting services including a portfolio dissemination and exploitation strategy, business plan development and go-to-market support.
  - Innovation radar: An initiative that identifies high-potential innovations, based on a data-driven methodology, and assists EU-funded researchers and innovators in reaching the market with their innovation.

3.4.3. Stages of the Plan

1st stage: Definition

The BiCIKL PDER is presented as a Deliverable D3.2 of the project in month 7 (November 2021). While originally was to be delivered in month 6 (October 2021), a delay of 1 month was requested (and approved) to ensure the involvement of all partners and the quality of the content substantiated on the information collected via a survey circulated among the RIs involved in the project.

2nd stage: Evaluation

A further review should be carried out in month 24 (May 2023) to provide a mid-term evaluation (MS9 PDER revision) and thus, identify bottlenecks and issues that would allow the partners to react accordingly, namely identify the measures to overcome any possible

deficiency in the implementation of the Plan as well as the resources to be assigned to reassure its effectiveness. To facilitate that review, the PDER also anchors on a permanent and structured dialogue with the interested parties, internal to the project but also external, including the RIs involved in BiCIKL, to build and sustain a fluid interactive forum that brings in the necessary feedback on the Plan, fosters cross-fertilization and increases commitment towards the exploitation, sustainability and improvement of the expected results.

3rd stage: Embedment

The new community started with BiCIKL was born to grow up, consolidate and enlarge around the data life cycle. Accordingly, the exploitation of the project results go far beyond the lifetime of the project. To that end, once the project is over, the RIs involved will commit to embed the results to the largest extent possible within their own development plan, and become engaged in their subsequent enhancement, should this be required, and in broadening the breadth of their remit.

4. Monitoring performance

The need to monitor performance goes beyond the assessment of the level of implementation of expected actions. The monitor of the activities included in the current PDER will equally support the level of achievement of the results that BiCIKL seeks to produce. Such impact is structured around five (5) criteria:

- Enlarge engaged users' communities (1),
- Improve awareness and trust (2);
- Drive towards harmonised datasets (3);
- Enhance data-linkages monitoring (4);
- Sustain long-lasting cooperation (5).

As envisaged in the sequence of stages through which the BiCIKL PDER will be implemented, the Plan will be reviewed in M24 of the project lifetime (i.e. April 2023) to evaluate the reach achieved and to implement, should be deemed necessary, correction actions that could foster, enhance and enlarge the proposed dissemination and outreach of the outcomes of the project.

4.1. Types of monitoring

Based on the tools and channels used, the PDER considers three types of monitoring:

a. Online
b. Events
c. Publication

Online monitoring includes finding and using online forums (social media, web, specialised online forums and blogs, etc.). The participation in social media, specifically in Twitter, stands as instrumental for disseminating widely and effectively, and the Twitter threads will equally be uploaded recurrently in the website to showcase the latest topics of interests, publications, possible debates around BiCIKL-related issues, linkages to calls, registration of events, etc.

Events monitoring includes those meetings that are organised under the project development but also those other conferences, seminars, fairs, networking activities and workshops of interest to the community. For the internal meetings, the idea is to monitor active participation of partners. The goal for monitoring other events is to raise awareness of the new community of BiCIKL, outline the importance of the data life cycle completeness, and promote alliances and cooperation towards the achievement of the project's goals and beyond, to reinforce and sustain the growth of the collaborative work supported by BiCIKL among the participating RIs. Few examples of the BiCIKL presence at key conferences are TDWG, IUCN, BHL and others. Moreover, BiCIKL presence will be promoted at expert meetings and workshops, such as Biodiversity Summit 2021, 20th International Botanical Congress, Genome Engineering and Synthetic Biology, etc.

Participation in those external events is encouraged to cross-fertilize and find synergies with other related initiatives (sharing hashtags, links to websites, presentations and invitations to speakers etc.).

Publication monitoring will cover specialized publications in order to keep the project partners updated about the latest results and announcements in the fields and activities related to the project. It will include presentation of research findings and evaluation of its scientific quality through feedback from the scientific community in terms of open access, peer-reviewed publications, as well as publications in special issues of scientific journals.

As per the Survey conducted, the RIs participating have identified the ideal frequency of the different dissemination means identified in the PDER, and thus the relative importance of them.

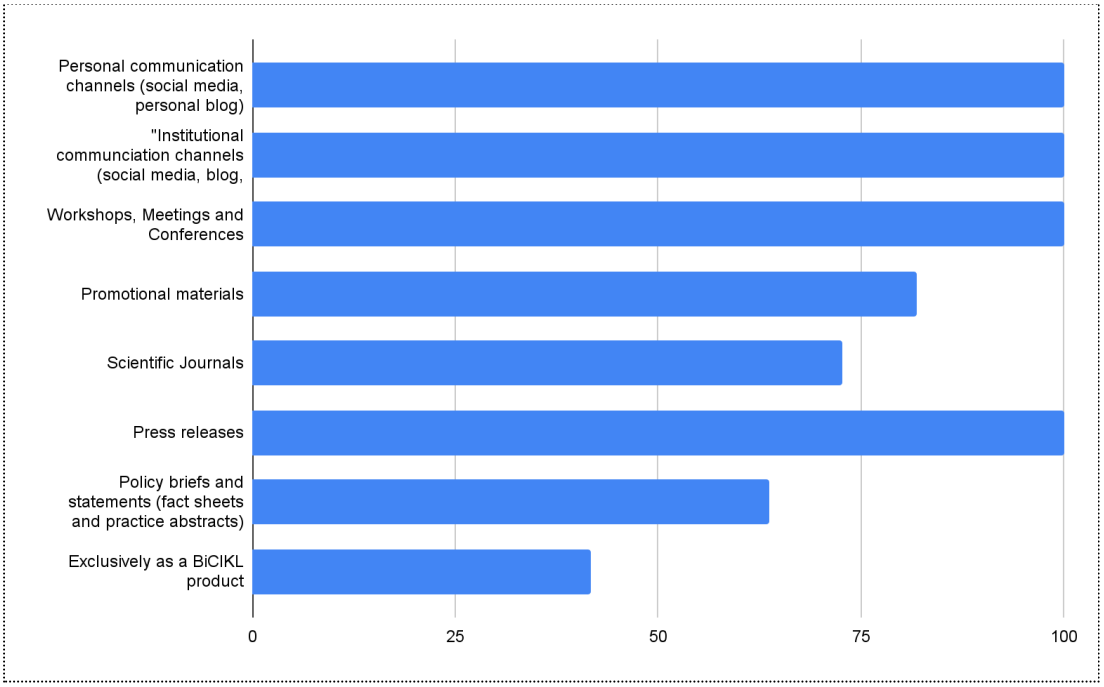

Fig. 16. Frequency (%) of expected use of dissemination and exploitation means by WPs.

From the feedback received, the following activities are to be monitored throughout the BiCIKL project, each of them with its corresponding most suitable mechanism to effectively monitor progress.

Monitoring activity	**Monitoring mechanisms**
Online:	
a. Project website	• Visitors, returning visitors, geographic distribution, etc. • Prominence in google searches *Source: Google Analytics* Frequency: every 6 months
b. Social media: Facebook, Twitter, LinkedIn, You Tube, Slideshare	• Number of online interactions on the social media channels: Number of posts; number of retweets; number of followers and "likes", number of impressions *Source: analytics of Twitter and Facebook* Frequency: every 6 months
c. Comm material (Posters and leaflets, flyers, and promotional videos)	• Number of materials produced *Source:* Number of materials produced and downloads
d. Specialised material (factsheets, infographics, policy briefs)	• Number of materials produced *Source: project records*
Events:	
e. Meetings - All-hands meetings - EB meetings - Pillar meetings	• data collated in each meeting (participants, agenda, notes) *Source: Teamwork*
f. Workshops and RTs	• attendance numbers *Source: data collated in each workshop/RT*
g. External Events	• attendance numbers • distribution of the participating public (RIs and others) • Presentations and posters *Source: data collated in each event/conference, and Registration forms*
Publications	
h. Papers	• Scientific papers published • Journal articles

Source: Internal to the project (Pensoft)

4.2. Key Performance Indicators (KPIs)

Communication			
	Tool	Output	Outreach
KPI-COMM-1	Website	at least 1 news item per month at least 2 calendar events per month	>10 000 visitors/project duration 25% increase in website traffic/year
KPI-COMM-2	Twitter	at least 8 tweets per month	>500/project duration
KPI-COMM-3	Press releases	at least 6 press releases for the project duration	> 1000 views/press release
KPI-COMM-4	Specialised material (brochures, factsheets, infographics, policy briefs)	1 project brochure 2 brochures (on BKH and FDP) 5 fact sheets 2 policy briefs	number of downloads from website; number of distributed copies
KPI-COMM-5	BiCIKL featured on project's websites	at least 5 news pieces sent	at least one mention per year
Dissemination			
KPI-DISS-1	Participation at events	at least 2 events per year	Qualitative analysis of audience
KPI-DISS-2	Scientific papers	at least 1 scientific paper in peer-reviewed journal, using BiCIKL data per year	publication in peer-review journal, promoted by BiCIKL partners
		at least 1 journal article per year	
Exploitation			
KPI-EXPL-1	BiCIKL Workshops	2 workshops organised with	> 10 participants per workshop

		relevant stakeholders	
KPI-EXPL-2	Round tables	4 round tables organised with experts	> 6 participants per roundtable

5. Open Data policy

Communication and dissemination actions will strictly follow the Open Data policy created for BiCIKL.

BiCIKL project highlights the need to have research data openly used, by maximizing access to and re-use of these data. To coordinate data management within the project, BiCIKL has developed a guiding Data Management Plan (DMP) (D12.9).

The DMP specifically covered:

- handling of research data during and after the project;
- data collection and processing;
- methodologies and standards;
- data sharing and open access; and
- curation and preservation.

For all communication-related topics, and when applicable, the DMP specifies the recommended licensing schemes, preferably using the Creative Commons Public Domain (CC0) and Attribution (CC BY) licenses (as suggested by H2020).

In the cases where the datasets cannot be publicly shared, the reasons will be mentioned in its metadata description (e.g. ethical, rules of personal data, intellectual property, commercial, privacy-related, security-related).

6. Concluding remarks

The PDER as has been presented in this document stands as a pivotal mechanism to ensure that the BiCIKL project has the desirable impact within and outside the realm of the participating RIs.

BiCIKL intends to be a starting point in a much longer process that will continue after the project ends. The envisaged starting community, created around the data life cycle and within the life and natural sciences realm, needs to be enlarged, improved and sustained over time, with the involvement of new stakeholders that will bring in new perspectives and data, add new consistent pipelines and thus, contribute to consolidate the new community. To achieve this goal, that goes further beyond the lifetime of a single project, dissemination and exploitation of results is crucial. Identifying those results, sharing them widely and then promoting the potential use of the expected results by a set of varied players is at the core of the PDER.

The Plan identifies target audiences, describes the mechanisms, develops the tools and materials, sets up the channels, and organizes the necessary discussion spaces that will allow the partners to communicate and further share their outcomes both, internally and externally. Specific events, including RTs and workshops will be scheduled to raise awareness of the BiCIKL expected results, promote involvement of external stakeholders in the development of this community and identify efficient paths to continue growing. To ensure its efficiency and due progress, the Plan is organized in a 3-stages process, including a mid-term review. Furthermore, several KPIs have been settled and together with the evaluation will set the grounds to analyse the correct implementation of the PDER and, whenever necessary, introduce correction measures.

Commitment from involved partners is crucial and for that WP11 and WP3 leaders are engaged to foster, guide and support the practical implementation of this PDER.

7. Acknowledgements

Special thanks to all partners that have contributed to the Survey, the feedback from which has set the grounds for the current document. My gratitude to the Pensoft team (namely **Boris Barov, Kristina Hristova, Anna Sapundzhieva, and Lyubomir Penev**) for reviewing the draft, their highly appreciated comments and their guidance in improving some sections. Particular added thanks to the internal reviewers, **Jerry Lanfear, Sara Montinaro, and José Benito González**, who took their time to read, comment and thus, highly contributed to improve the document. Heartily thanks to **Laura Tilley** for her continuous support, and her contributions with the analysis of the data captured in the Survey, its structure and categorization. Such analysis and derived remarks have been pivotal for identifying the components of the Plan and thus, constructing the PDER.

8. Annexes (incl. references)

Annex 1: The BiCIKL Communication Strategy (MS7)

Annex 2: The Data Management Plan (D12.9 DMP)

Annex 3. The Open Access framework and guidelines for publications and data

- European Research Council (ERC): Guidelines on Implementation of Open Access to Scientific Publications and Research Data
- European Commission (EC): Guidelines for Dissemination and Exploitation of results

Annex 4: The List of Project's Deliverables
Deliverables are listed in Pages 92-96 of the BiCIKL Grant Agreement

Type of deliverable:
R - Report
DEM - Demonstration

Level of dissemination:
CO - Confidential
PU - Public

Annex 5. Survey (Cognito form)

Annex 6. List of Figures

Annex 7. Social media accounts: BiCIKL Partners & Infrastructures

Annex 5

BiCIKL - Dissemination and Exploitation of Results

WP3 - Task T3.2

Rationale

Under Task 3.2 "Engagement and Dissemination", led by CETAF, the development of a meaningful 'Plan for dissemination and exploitation of project results' (D 3.2), requires to first identify the expected results of the project, their potential added value as well as the targeted audiences that each of those intend to reach.

To that end, we need feedback from the BiCIKL major partners that will help us to describe the scope of the Plan and foresee the best strategy to implement messages, mechanisms and channels that will support dissemination of results efficiently and impactfully, under the overarching framework of the Biodiversity Knowledge Hub and also beyoind the project lifetime.

We would much appreciate your contribution, as WP leader, by filling this survey.

Objectives of the Survey

1. Compile the set of expected key exploitable results (KER)
2. Identify the related targeted audiences
3. Contribute to identify mechanisms for exploiting BiCIKL KER results
4. Support potential linkages among results through the Biodiversity Knowledge Hub

According to the European Commission's definition, a key exploitable result (KER) is an output that has been selected and prioritised due to its high level of importance to the project's objectives. Results that are considered to make use and drive benefits, downstream the value chain of a product, process, or solution, or act as an important input to policy, further research, or education are considered to be KER.

Identification

Name *

First | Last

Affiliation *

Research Infrastructure represented *

BiCIKL related Task [number and title] *

Which are the key exploitable results (KER) of your work in BiCIKL [check all that apply] *

- [ ] Solutions to important technical problems
- [ ] New workflows and/or tools
- [ ] New standards
- [ ] High-level event/forum
- [ ] Scientific peer-reviewed articles
- [ ] Web-based databases/datasets
- [ ] Development/upgrade of services
- [ ] Policy recommendations/guidelines
- [ ] Scientific reports
- [ ] Others
- [ ] Other

QUESTIONS

QUESTIONS

1. DISSEMINATION OF EXPECTED RESULTS FROM BiCIKL

Q1. Which BiCIKL internal communication channels are you expecting to use to communicate your research results? *

- [ ] BiCIKL website
- [ ] BiCIKL social media
- [ ] BiCIKL e-newsletter

Q2. Would you recommend a special issue / event to collect and further disseminate the BiCIKL expected results collectively? *

Q3. How do you plan to disseminate your research results? [check all that apply] *

- [ ] Exclusively as a BiCIKL product (via WP3)
- [ ] Workshops, Meetings and Conferences [specify which below]
- [ ] Promotional materials
- [ ] Personal communication channels (social media, personal blog)
- [ ] Scientific Journals [specify which below]
- [ ] Policy briefs and statements (fact sheets and practice abstracts)
- [ ] Press releases
- [ ] Institutional communciation channels (social media, blog, journal, online repository, PR platforms)
- [ ] Other

3.1 Specify which journals (if you've selected this option above)

3.2 How many peer-reviewed articles do you plan to publish as part of your work in WPx?

3.3 Specify which Workshops, Meetings or Conferences (if you've selected this option above)

3.4 Indicate which social media channels (if you've selected this option above)

- [ ] Twitter
- [ ] Facebook
- [ ] LinkedIn
- [ ] Other

Q4. Which of the following target groups are you planning to reach? [check all that apply] *

- [ ] Project Consortium
- [ ] Policymakers: European
- [ ] Experts and practitioners involved in data mobilisation (publishers, etc)
- [ ] Policymakers: National and sub-national
- [ ] Policymakers: International
- [ ] Scientists, including universities and research institutes
- [ ] All of the above
- [ ] Other

2. EXPECTED EXPLOITATION OF RESULTS from BiCIKL

Q5. Could you please describe in few lines the expected exploitable results you expect to achieve? [from question 1.5 above] *

Q6. To which mechanisms do your expected results contribute to improve RI interconnection in the data life cycle community of RIs? *

Q7. How can your expected results contribute to the creation and consolidation of the new community to be formed with BiCIKL? *

Q8. What is the practical application of your results? Please describe how your results will be used in practice and what value does it bring to the biodiversity data life cycle. *

Q9. Who are the potential users of your results? *

Q10. What is the expected scale of your results? (Number of users; national; local; EU; international) *

Q11. Do you foresee any potential future commercialisation of your results? *

3. INTANGIBLE IMPACT from BiCIKL

Q12. Is there any other positive impact that you foresee BiCIKL will bring to the Biodiversity-related community? (please list) *

Q13. Could you please indicate how such impact could be measured? *

NOTES

- Tangible results are meant to be of any kind (from IT related such as databases, platforms, web-based developments, to policy-related documents such as recommendations, best practices or others)
- Stakeholders linked to the results are meant to be related RIs, existing networks or organizations that would have to be directly involved in the development and enhancement of the envisaged products
- Community of users is meant to be the targeted audience, i.e. a group of specific users that could directly benefit from the

NOTES

- Tangible results are meant to be of any kind (from IT related such as databases, platforms, web-based developments, to policy-related documents such as recommendations, best practices or others)
- Stakeholders linked to the results are meant to be related RIs, existing networks or organizations that would have to be directly involved in the development and enhancement of the envisaged products
- Community of users is meant to be the targeted audience, i.e. a group of specific users that could directly benefit from the result provided by the BiCIKL Task (e.g. taxonomists, ecologists, publishing platforms, etc)

Submit

Annex 7
Social media accounts: BiCIKL Partners & Infrastructures

Partners	Twitter	Facebook	LinkedIn
Pensoft	@Pensoft	/Pensoft	/pensoft-publishers
Naturalis	@naturalis_sci	/museumnaturalis	-
Plazi	@plazi_ch	-	-
Meise	@botanicgarden01	/plantentuinmeise2	-
Elixir Europe	@ELIXIREurope	-	/elixir-europe
CERN	@CERN	/cern	/cern
CETAF	@eurotaxonomy	/eurotaxonomy	/cetaf---consortium-of-european-taxonomic-facilities
SIB	@ISBSIB	/SIBbioinformatics	/sib-swiss-institute-of-bioinformatics
Tartu University	@unitartu	/tartuuniversity	-
LifeWatch ERIC	@LifeWatchERIC	/ERICLifeWatch	/lifewatch-eric
BGBM / Freie Universität Berlin	@FU_Berlin	/freieuniversitaetberlin	/freie-universitat-berlin
GBIF	@GBIF	/gbifnews	/gbif
Species2000	-	-	-
TDWG	@tdwg	-	-
Infrastructures	**Twitter**	**Facebook**	**LinkedIn**
ARPHA	@ARPHAPlatform	-	/alpha-publishing-platform
BGBM / Freie Universität Berlin	@FU_Berlin	/freieuniversitaetberlin	/freie-universitat-berlin
SiBiLS	@sibliterature	-	-
ENA	@ENASequence	-	-
Plazi	@plazi_ch	-	-
Meise	@botanicgarden01	/plantentuinmeise2	-
OpenBiodiv	-	-	-
Zenodo	@ZENODO_ORG	-	-
PlutoF	@plutof_platform	-	-
DiSSCo	@DiSSCoEU	-	/dissco
LifeWatch ERIC	@LifeWatchERIC	/ERICLifeWatch	/lifewatch-eric
Catalogue of Life	@catalogueoflife	/CatalogueOfLife	-
Biodiversity Literature Repository	@biolitrepo	-	-
GBIF	@GBIF	/gbifnews	/gbif
Supporting Research Infrastructures	**Twitter**	**Facebook**	**LinkedIn**
Europe PMC	@EuropePMC_news	-	-
EMBL-EBI	@emblebi	/EMBLEBI	/ebi
Biodiversity Heritage Library (BHL)	@BioDivLibrary	/BioDivLibrary	-
Global Genome Biodiversity Network (GGBN)	@GGBNOutreach	/ggbnoutreach	-
iBOL	@iBOLConsortium	/iBOLConsortium	-