Use Case Handbook

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Introduction to NFDI e.V. and NFDI4Microbiota

The National Research Data Infrastructure (NFDI) has the objective to systematically index, edit, interconnect and make available the valuable stock of data from science and research. Digital data storage is an indispensable prerequisite for treating new research issues, generating findings, and making innovations. Therefore, the NFDI association was founded in 2020. The Deutsche Forschungsgesellschaft (DFG) is funding different NFDI consortia (independently from the NFDI e.V.). Further information and introductory videos can be found on the DFG website.

NFDI4Microbiota is a consortium of the German NFDI initiative, funded by the Deutsche Forschungsgemeinschaft e.V. (DFG). The **vision** of the consortium is that researchers in microbiology (including bacteriology, virology, protistology, mycology and parasitology) can translate research data easily into a deep understanding of microbial species and their interactions. The **mission** of the NFDI4Microbiota consortium is to be the central hub in Germany for supporting the microbiology community with access to data, analysis services, data and metadata standards, and training. Therefore, the **connection and interaction of NFDI4Microbiota with the German microbiology community** is key for the success of the consortium. For this purpose, direct connections to numerous institutions across the country have to be established, which shall be realized through the NFDI4Microbiota **Use Cases.**

Glossary/ frequently used vocabulary in NFDI4Microbiota

This glossary gathers frequently used terms in NFDI4Microbiota and abbreviations specifically used in this Use Case Handbook. While not all terms might be found in the Handbook, it is a good reference when talking to NFDI4Microbiota members.

AU - Administration unit of NFDI4Microbiota (Barbara Götz, Carmen Paulmann, Cordula Hege)

BoD - Board of directors of NFDI4Microbiota (since 2022-06-21: Konrad Förstner and Alice McHardy)

Flex Funds - The Flex(ible) Funds of NFDI4Microbiota are a means of monetary support to help expand NFDI4Microbiota's infrastructure and to fund new ideas and endeavors that are currently not covered by NFDI4Microbiota's working program. The application procedure for Flex Funds is a separate process and interested parties should check the specific requirements beforehand.

UC - Use Case

UC members - Persons who joined a specially created User Special Interest Group (see below) and are working on or contributing to a Use Case. The Use Case member can indirectly benefit from the Use Case but is not entitled to the same amount of support that a UC project lead gets from NFDI4Microbiota.

UC project lead - For accepted and active Use Cases, the main responsible persons (a minimum of two) who submitted the Use Case are called UC project leads. They are the main point of contact and responsible to follow the set of commitments as well as receive the benefits specified for Use Case projects.

UC team - NFDI4Microbiota consortium members, who are responsible to ensure communication between the NFDI4Microbiota consortium and the Use Cases. These consist mainly of measure M1.7 members of the RWTH Aachen institution (Charlie Pauvert, Maja Magel, Thomas Clavel) and the ZB MED institution (Barbara Götz, Konrad Förstner). You can reach us collectively with the NFDI4Microbiota contact form.

User Special Interest Groups (USIGs) - Bottom-Up approach offered by NFDI4Microbiota: Please reach out if you are interested in initiating a group. The User Special Interest Groups represent users' interests in specific issues and will help to bring users' voices into the decision-making process. USIGs consist of experts on a specific subject who represent the research community for defined cross-cutting topics in technical, scientific or social domains.

WIP - Work in Progress

What are NFDI4Microbiota Use Cases?

The mission of NFDI4Microbiota is to facilitate and stimulate data sharing according to the FAIR principles to ensure easy, open and efficient access to microbial research data and their associated metadata. An important measure to achieve this goal is to implement Use Cases. These are scientific projects in the broad field of microbiology research that are performed at partner and participant institutions with the involvement of one or multiple additional stakeholders (e.g. single institutions, research consortia, societies). Use Cases should help to

1. test and fine-tune solutions developed within NFDI4Microbiota based on ongoing scientific projects and generate scientific results or reusable tools.
2. bring the expertise of several stakeholders involved in the Use Cases together to create elaborate solutions that can be easily adapted by other research projects to make their work more efficient.
3. nurture ideas for the consortium to implement additional measures to address newly detected needs.

The activities taking place in a Use Case are either funded via NFDI4Microbiota core funding or happen as in-kind contributions. In case there is a need for resources beyond this, partners and participating institutions can apply for Flex Funds to further support a Use Case.

Active NFDI4Microbiota Use Cases can be found on NFDI4Microbiota's webpage featuring their short acronym and a descriptive title. If you wish to learn more about certain Use Cases, follow the respective link to the Use Case subpages and learn more about (1) their scientific relevance and the project background, (2) the intended aims and output of the Use Case, and (3) how you can contribute and reach the project leads.

Inactive NFDI4Microbiota Use Cases were described in the form of stories involving scientists and interactions with the consortium during the bustling phase of proposal writing. In case you have an idea in mind for a Use Case but are unsure whether this is a good foundation for a Use Case, do not hesitate to contact us but also look at the inactive Use Cases noted in our proposal.

How can you contribute to the Use Cases?

Contribute to existing Use Cases

NFDI4Microbiota has an overview of [currently active Use Cases](). The project leads are always welcoming input and contributions to expand and check how relevant their solutions might be to other scientists. To learn more about the possibility to contribute, check out the "How can you contribute" section of each Use Case that you are thematically interested in. If your profile, interest and knowledge overlap with what the Use Case project leads seek, you are more than welcome to contact the project leads directly or use the [NFDI4Microbiota contact form]().

If you have some ideas on how to connect the existing Use Cases to other national and international societies, collaborative research centers or research infrastructure initiatives, reach out to us using the [NFDI4Microbiota contact form](). We may want to check your suggestions for applicability and scalability.

Submit a new NFDI4Microbiota Use Case

If you have a promising idea and are considering submitting an NFDI4Microbiota Use Case, keep in mind that [NFDI4Microbiota's benefit and support to active Use Cases]() project leads come with [commitments](). Please check if one or multiple of the following points regarding your project and its lead apply.

Your potential Use Case project…

- can benefit from NFDI4Microbiota's [tools and services]() as well as [other services]()?
- can contribute to NFDI4Microbiota's [tools and services]()?
- can showcase to others how a researcher of your discipline might use the tools, platform and services that NFDI4Microbiota offers?
- can be a driving or contributing factor to create elaborated solutions that can be easily adapted by other research projects to make their work more efficient?

NFDI4Microbiota is looking for Use Case project leads that have a lot of motivation and a high sense of responsibility to realize the full extent of the Use Case project. We therefore ask our Use Case project leads to fulfill the following prerequisites:

A project lead has…

- high motivation to push the project and find solutions, which means to
    - engage in active communication with NFDI4Microbiota
    - attend NFDI4Microbiota events
    - submit reports to the Use Case team of NFDI4Microbiota ([measure M1.7](#))
    - help push the Use Case so that a broad spectrum of stakeholders will be able to benefit from its results, especially in terms of integrating tools, workflows, and solutions into NFDI4Microbiota's infrastructure
- already suitable funding and personnel acquired to achieve **basic** aims of your project?
    - If you require more funding to extend your project beyond what NFDI4Microbiota's Use Case concept can offer you, then please refer to the [NFDI4Microbiota's Flex Fund procedure](#) to check if you fulfill the prerequisites to receive funding by NFDI4Microbiota.
- the following status:
    - NFDI4Microbiota partner
    - NFDI4Microbiota participant or their ambassador
    - external with a relation to the topics research data management and microbiome research.

A comprehensive overview of [commitments](#) and [benefits](#) expands on certain key aspects of being an NFDI4Microbiota Use Case.

If you are interested in submitting your project as a Use Case, please head over to [NFDI4Microbiota's overview on Use Cases](#) to see if the submission is open. Additionally, the section about the [general Use Case application and submission procedure](#) may be able to answer your remaining questions.

Information for project leads of an active NFDI4Microbiota Use Case

After successful acceptance of the Use Case, you, as the project lead will be able to benefit from a spectrum of measures that NFDI4Microbiota offers. In return, you accept your commitments as a Use Case project lead, to ensure smooth communication with NFDI4Microbiota. For more details check the information below. You are always welcome to reach out to us using the [NFDI4Microbiota contact form](#) or to the personal contacts at NFDI4Microbiota that you established already.

NFDI4Microbiota's benefit and support to your active Use Case

As an active Use Case project, NFDI4Microbiota wants to see you succeed as much as you do. Therefore, we offer benefits and support. Please check if one or multiple items from the list below will be beneficial to you and your Use Case.

Recommendations [during your active phase/ if applicable]:

If you are working on tools and services, these guidelines may be interesting for you. NFDI4Microbiota strongly endorses you to apply and follow these guidelines and recommendations and to use the resources provided to you. If you need additional information, we will happily set up a meeting with our experts.

☐ **Workflow Guidelines**
Condition: If you work with scientific computational workflows and analysis pipelines for data processing or are in the process of setting up a new one, please read the following community recommendations on how to create FAIR and interoperable workflows. Heads-up: NFDI4Microbiota primarily works with nextflow and nf-core.
More information: [Workflow Guidelines (nfdi4microbiota.github.io)](#)
If interested to learn more, get in contact with our Workflow working group via [NFDI4Microbiota contact form](#).

☐ **Minimal requirements for metadata standards**
Condition: If you collect or generate metadata (technical, environmental and/ or biological), please cross-check against NFDI4Microbiota's recommendations to ensure future findable, re-usable and interoperable data access of your work.
More information: [NFDI4Microbiota/MetadataStandards (github.com)](#)

● **Outreach and promotion of your intermediary results & accomplishments**
Purpose: NFDI4Microbiota will continuously promote your proceedings and increase your outreach to the community. If you plan workshops or successfully published and achieved your first accomplishments, don't hesitate to contact us directly.
Promotion channels: Mastodon, LinkedIn, NFD4Microbiota's quarterly newsletter & webportal, mailinglists
Contact: UC team

- **Training & workshops**
  Submit your upcoming workshops and NFDI4Microbiota will display them on its web portal as well as promote.
  Restriction for display: Free-of-charge course or training
  Form: Submission form
  Or participate in a free-of-charge NFDI4Microbiota workshop yourself.

- Information on and consultation for **Research data management, data management plans and electronic lab notebooks**

- **Displaying your tools and services**
  If you are working or frequently using a tool or service that is beneficial to the broader community, let us know and we will follow up with you to gather relevant information to check the tool, correctly display and promote your suggestions. This might also apply to wet-lab standard operating procedures.
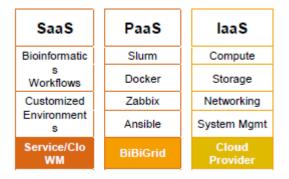
- **Recommendations for digital preservation**
  Guidelines to submit data in the PUBLISSO – Repository for Life Sciences (FRL) and on Zenodo (see Data Repositories).
  For digital preservation of software, code and scripts, **use** Zenodo or the Software Heritage archive.

Benefits for bioinformatic aficionados:

If you are in need of more infrastructural opportunities, check out our following services. If interested, we will be checking your needs and possibilities on a case-to-case basis.

SaaS	PaaS	IaaS
Bioinformatics Workflows	Slurm	Compute
	Docker	Storage
Customized Environments	Zabbix	Networking
	Ansible	System Mgmt
Service/Clo WM	BiBiGrid	Cloud Provider

- **Profit from our infrastructure (IaaS)**
  Service: We provide scalable computing resources from a single virtual machine (VM) for expert users (Openstack) or for simplified usage (SimpleVM) to complete cloud-based infrastructures via de.NBI cloud

- **Profit from our Platform (PaaS)**
  Use the BIBIGrid framework to set up a compute cluster in your cloud environment or use our workflow development system.

- **Pioneer and test our Cloud Workflow Manager (SaaS)**
  You want to easily transform your workflow to a web-based service and are already using nextflow and S3 buckets? Then reach out as a potential tester for CloWM (Cloud based Workflow Manager).

Potential support available in the future:

- **Receive support for best-practice analytical workflows and services**
  Check our resources to set up your own workflows and analytical services according to best practices.
  If you can't find suitable information on our Knowledge Base, reach out to us to set up an individual consultation.

- **Advice on your legal questions**
  Potential future service: Collection of the research communities most common legal concerns and acquisition of legal consult through NFDI4Microbiota.

- **Check your tool against NFDI4Microbiota's data type quality standards**
  You can find human-readable information here: [Data Quality Control (nfdi4microbiota.github.io)](nfdi4microbiota.github.io)
  Automatic checks will be available mid of 2024.

- **Integrating your tools and services in NFDI4Microbiota**
  If you are interested in integrating your tools, services and workflows on NFDI4Microbiota's webportal, there are certain conditions to be met (i.e. nextflow language, use of ClowM, de.NBI servers, …). Please note, that we can consult you in meeting the proper requirements, but are not able to offer extensive technical assistance to realize this. Please bring your own man-power.

- **A list of future benefits that you may profit from or contribute to in the future.** If you/ your projects have special requirements that need to be met, please reach out to us as your feedback will be crucial to provide targeted services to you. For more information or feedback reach out to us via NFDI4Microbiota contact form.
  - Data storage platform and access via NFDI4Microbiota/ Aruna, i.e. for your databases
    Guideline for individual access: https://arunastorage.github.io/Documentation/v1.0.x/
  - REST API for bulk up- and download of data
  - Profit from various umbrella databases with extensive curated metadata
  - Recommendations for digital preservation
    - Recommendations on file formats (WIP).
    - Standard Operating Procedures (SOPs) for labs (WIP).
    - Digital preservation in Data Management Plans (DMPs) (WIP).

Commitments of a Use Case project lead

Mandatory commitments [during application & onboarding phase]

By submitting and being selected as a Use Case, you accept the following points and commit to following these to the best of your ability. Please read the guidelines and recommendations carefully.
To be completed within three months after the Use Case has been accepted to be part of NFDI4Microbiota.

☐ **NFDI4Microbiota Internal Policy Guidelines**
Purpose: Information on how NFDI4Microbiota members and Use Case project leads are supposed to handle availability, access, and documentation of software, data, publications, hosting of online services, open source, terms of use, etc.
Policy Hyperlink: NFDI4Microbiota Foundational Guidelines

☐ **Use Case Handbook (first point of reference)**
Purpose: To give you the best possible overview of what NFDI4Microbiota values and mission is as well as how NFDI4Microbiota intends to incorporate the Use Cases and their output into the working frame. This document is supposed to manage information and expectations for both Use Case project leads and NFDI4Microbiota members.

☐ **Use Case onboarding session**
Purpose: Introduction of NFDI4Microbiota, verbal summary of Use Case Handbook and FAQ session for your general questions at the beginning of your Use Case project.
Contact: Invitations will be sent out by the UC team after the review phase.

☐ **Webpage texts and graphical abstracts**
Purpose: NFDI4Microbiota will display your Use Case project on the NFDI4Microbiota webpage and create promotional tweets based on your input to enhance interaction between your Use Case and the research community.
Your initial input will be required to fill out the provided templates. The UC team will support you with minor edits and visual adaptations before uploading it on NFDI4Microbiota's website as CC-by 4.0 licensed material.
Contact person: UC team
Templates for the webtext and graphical abstract are provided by the UC team.

Mandatory commitments [during your active Use Case phase]

☐ **Annual report**
Purpose: Informing NFDI4Microbiota about the progress of your Use Case projects.
Due: November of each year, reminder and template will be provided by UC team
Template: provided by UC team
Contact: UC team

☐ **NFDI4Microbiota conference attendance**
annually: approx. November 2024
Contact: NFDI4Microbiota contact form

☐ **NFDI4Microbiota Use Case conference attendance**
Purpose: The Use Cases will have a platform to present their first results, get feedback, meet the NFDI4Microbiota expert's and exchange with interested parties. The first round of Use Cases will be concluded and showcase the „end of project summary/ User stories".
Date: May 2024 (2 day event)
Contact: UC team

☐ **Workshop organization is strongly encouraged**
Recommendation: If a workshop is planned as part of your Use Case project, NDI4Microbiota supports open and free training and workshop sessions. We strongly encourage you to organize virtual workshops.
Registration costs: NFDI4Microbiota supports **open and free** workshop and training content. If an in-person workshop is needed and you do not have the required funds to provide your participants with a free registration, please contact the UC team ahead of time to check possibilities of financial support.

Commitment for the end-phase of your Use Case

Have you achieved most of your goals, aims, and deliverables and are now approaching the end? Don't forget that we want to showcase your beneficial outcome to the whole community, so don't forget about the last item on your list:

☐ **End of project summary/ User stories/ community guidelines & recommendations**
Purpose: „Showing" your target audience as well as early young researchers how your Use Case could be applied to their research questions. Format: A summarizing text- or video-based walkthrough on how to use and/ or replicate the outcome of your Use Case with a starting point, intermediate steps, dependencies and the final endproduct.
Assistance and templates will be provided by UC team.
Contact: UC team, NFDI4Microbiota contact form

I want to submit a new Use Case or apply to an activate Use Cases, what do I do?

General Use Case application and submission procedure

You want to apply and submit a Use Case? You read the sections about what a Use Case entails as well as the benefits, support that NFDI4Microbiota can provide and commitments you accept? And now you want to learn the specifics about the application, submission and selection procedure?

Great! This is a simplified overview of the procedure that NFDI4Microbiota follows internally:

- Wait for NFDI4Microbiota's call of Use Case submissions via our Newsletter or webpage
- Apply online, attach your documents as specified in the call
    - submission form
    - consent forms
- Review and selection procedure of NFDI4Microbiota:
    - The reviewer panel consists of 5-7 NFDI4Microbiota partners or members that represent the different Task Areas of the consortium
    - The selection criteria and a review template is used to assess each Use Case. The following criteria are usually used for ranking the Use Case applications:
        - Relevance of the Use Case/ General content
        - Interconnectivity with NFDI measures
        - Urgency
        - Feasibility
        - Benefit for the community
        - Community involvement
        - Relation to other Use Cases
        - Potential for growth/ Basic needs
        - Affordability to support
    - The review template is filled in by each reviewer independently.
    - The final selection is made during an in-person/ virtual discussion between the reviewers and approved by the BoD.
- You receive an answer and feedback from the UC team.

- If accepted, you will be onboarded within 3 months, this entails knowing about your commitments as the project lead of an active Use Case
- If rejected, we provide a short statement on the main reason for rejection and encourage you to try again next time or check to see if you can contribute to existing Use Case

FAQ

What is the difference between a Use Case and a Flex Fund project?

A Flex Fund project gets funding if approved by the project review board and the general assembly of NFDI4Microbiota for max. one year. The Flex Fund review board consists of members independent from NFDI4Microbiota consortium members.
The Use Case can generally be active for a longer time period than one year and does not receive funding. Use Cases are selected by a review panel consisting of NFDI4Microbiota Task Area members. A Use Case can apply and get funding as a Flex Fund project, but has to go through the regular channel for selection of a Flex Fund.

I was accepted as a Use Case, can I still apply to a Flex Fund? What kind of support do I get?

If you are a member of a participating institution, you can apply for Flex Funds, once the call opens. As an active Use Case, you can ask the UC team to provide you with a letter of recommendation, which you can submit together with your Flex Fund application.

I got accepted as a Flex Fund. Do I get the same benefits as a Use Case?

Use Cases and Flex Funds are handled differently within NFDI4Microbiota. You do not automatically have the same benefits or commitments. You are allowed to apply as a Use Case additionally.

I am now both a Flex Fund and a Use Case. What do I do?

Are your aims/ work packages/ deliverables identical for the Flex Fund and Use Case application? If yes, let the UC team know, so that your need for reporting is diminished.
Check out the requirements and benefits of a Use Case. Apart from that, keep up the good work and progress on your aims/ work packages/ deliverables.

I want to organize a workshop for my Use Case. What do I have to consider? Can I get funding to organize an in-person workshop as a Use Case?

Online, hybrid or in-person:
NFDI4Microbiota offers a variety of workshops and trainings to the research community. Whenever possible, online and hybrid workshops are preferred to give all members a chance to attend and take part in these training opportunities.
Free-of-charge:
NFDI4Microbiota offers free-of-charge workshops and training to the community. If you want your workshops or training to be promoted via our channels, please consider the point below.
Funding needed to offer a free-of-charge workshop?

If your current financial situation cannot cover the fees to offer a **free-of-charge** workshop or training, consider including this point during your application or reach out to your M1.7 contact person with an approximate budget estimate.

Disclaimer:

Only free-of-charge workshops and training will be promoted via NFDI4Microbiota channels. We will try to assess the possibility to offer financial support, but this will need to be reviewed on a case-by-case basis.

Do I need to be an NFDI4Microbiota participant to apply for Use Cases?

Use Case project leads do not need to have a participant status to apply and be selected. Support is covered by NFDI4Microbiota partners through the NFDI4Microbiota work program and in-kind contributions.

What are the time constraints for Use Case and Flex Fund projects?

Use Cases can continue over an extended period of time, depending on your aims. Support is provided by NFDI4Microbiota partners as specified in "What are NFDI4Microbiota Use Cases?" and "NFDI4Microbiota's benefit and support to active Use Cases".

Flex Funds are limited to a one year period starting in January and ending in December. Please consult the Flex Fund application procedure and documents for more details.