This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 871106

Deliverable Number: 5.3	**Due date: Month 59 (September 2025)**
Deliverable Title: Evaluation of novel access procedures **WP number:** 5 **Lead Beneficiary:** HZDR **Deliverable type:** Report **Dissemination level:** Public	**Reporting Period**: RP2 **Issue date**: October 1st, 2025 **Author(s):** T. Herrmannsdörfer (HZDR), Ch. Warth-Martin (CNRS), U. Zeitler (RU), N. Bruyant (CNRS) S. Krämer (CNRS), R. Hill (UNOT), Y. Skourski (HZDR)

ISABEL

Improving the sustainability of the European Magnetic Field Laboratory

D5.3 Evaluation of novel access procedures
REPORT

Version	Modifications	Date	Authors
1.0	First draft	15 July 2025	T. Herrmannsdörfer (HZDR) Ch. Warth-Martin (CNRS) U. Zeitler (RU) N. Bruyant (CNRS) S. Krämer (CNRS) R. Hill (UNOT) Y. Skourski (HZDR)
1.1	Updates	1 August 2025	
1.2	Final version	1 October 2025	

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 871106

Document abstract

This deliverable, D5.3 "Evaluation of novel access procedures", is elaborated under ISABEL's work package 5, "New access procedures", which aims at introducing additional access pilots for the user community. D5.3 is the final step of WP5 and presents a statistical-data based evaluation of user acceptance and provides recommendations on the continuation of novel access modes. In chapter 1 we provide a brief introduction to the topic. Based on the preceding deliverable, D5.2, in chapter 2 we present definitions of the novel access modes in abstract style. In chapter 3, we present statistical data on the user acceptance of all access modes collected between May 2021 and May 2025. Finally, in chapter 4 we analyze and evaluate these data in terms of continuation, future modification and long-term establishment of tailored access modes to the EMFL.

Table of contents

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 871106

1. Introduction

In work package 5 of the ISABEL project, we have prepared, implemented, announced and tested the following new access procedures to the EMFL for its users.

- ***Fast-Track Access* procedure** (task 5.2)
- ***Long-term Access* procedure** (task 5.3)
- ***Industrial-User Access* procedure** (task 5.4)
- ***Dual-Access* procedure to regional partner facilities and to EMFL** (task 5.5)
- ***First-Time Access* procedure** (task 5.6)
- ***Technical-Development Access* procedure** (added during RP1 of ISABEL)

The spirit behind that action is to serve Europe's and the global science community in the best possible manner by providing users with an evolved range of proposal-based research opportunities tailored to their individual and community-specific research needs. In the course of the ISABEL project, these new access procedures have been, step-by-step, announced by us on the EMFL and ISABEL websites:

https://emfl.eu/apply-for-magnet-time/

https://emfl.eu/isabel/novel-access-modes/

Further, we have presented the new access modes to EMFL in various articles in the EMFL news:

https://emfl.eu/emfl_newsletter/

Based on the experiences of the ISABEL project, we will continue to introduce new access procedures in the future in order to facilitate access to the EMFL for potential users and make it as effective as possible.

2. Short introduction into EMFL novel access procedures

In the course of the ISABEL project, we have introduced a set of novel access procedures (see 2.1 to 2.6 below) for the users of the EMFL by defining certain standards. E.g., in order to monitor and to discuss internal drafts of access modes, we have introduced flow charts that describe the full proposal submission, evaluation, decision, and communication scheme. We have described these access-procedure individual schemes in detail in our D5.2 deliverable report. In addition, in 2.7 we describe a variant of an access procedure mode that we did not yet consider as a special category, the so-called *Combined Access,* that involves complex high-field experiments at other large EU research infrastructures.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 871106

2.1. Fast-Track Access procedure (M12 – M60)

Task 5.2 - task leader**:** N. Bruyant (CNRS)

We have prepared the novel *Fast-Track Access* procedure to meet rapid developments in science and technology that call for faster, high-priority access to large-scale facilities than the *Regular Access* procedures provide. Prominent examples are the identification of novel superconducting or topological systems. On such occasions, a convincingly urgent scientific case enables fast access to the EMFL installations. The high-field user community indeed clearly benefits and at the same time, the EMFL will raise its attractiveness and efficiency for the users. *Fast-Track Access* requests are addressed to the EMFL Board of Directors (BoD). The BoD evaluates and decides rapidly, if needed, after consultation of one or more EMFL Selection Committee (SC) members and local contacts (the latter one in terms of technical feasibility). In case of a positive evaluation, the user is supported by priority and fast access to the EMFL installations. *Fast-Track Access* was started in October 2022.

The *Fast-Track Access* is the only proposal selection procedure that is decoupled from the usual twice-a-year modus with two proposal submission deadlines on May 15 and November 15. For more details of the novel access modes, see the D5.2 report.

2.2. Long-Term Access mode (M12 – M60)

Task 2.3 - task leader: U. Zeitler (RU)

In order to meet the demand for *Long-Term Access* schemes such as complex high-level science cases that require a sequence of high-field experiments, we have developed and offered a tailored *Long-Term Access* procedure. Due to the considerable expenditure to elaborate *Long-Term Access* proposals, the EMFL BoD evaluates such proposals as a special category. If positively evaluated, users would have obtained an extended amount of access over a two to three-year period. *Long-Term Access* proposals have been accepted since fall 2022. For more details of the novel access modes, see the D5.2 report.

2.3. Industrial-User Access mode (M12 – M60)

Task 2.4 - task leader: S. Krämer (CNRS)

The EMFL aims at increasing its attractivity for industrial users. Therefore, the ISABEL project team has prepared a special access mode for industrial users. In contrast to academic researchers, mainly focusing on publicly funded fundamental research and interested in fast publication of results, industrial users often require confidentiality of their results. As an information and contact point, a special section with a contact form for industrial users has been created on the EMFL website.

Once the needs of the industrial users have been defined, *Industrial-User Access* proposals are evaluated and decided within 2 weeks by the EMFL Coordination Board. Proposals for *Industrial-User Access* have been collected since autumn 2022. For more details of the novel access modes, see the D5.2 report.

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 871106

2.4. Dual-Access procedure to regional partner facilities and to EMFL (M1-M60)

Task 2.5 - task leader: R. Hill (UNOT)

In accordance with the schedule of the ISABEL proposal, we developed and introduced the *Dual-Access* procedure in early 2021. The motive for *Dual Access* is to lower the barrier of potential EMFL users which do not have direct access to experimental equipment. This procedure allows users to perform preliminary studies at lower magnetic fields to validate the experimental feasibility of their project, before moving to experiments in high field. In order to ease the access to EMFL installations and to enlarge the potential user community, we started the novel *Dual-Access* following the first call after starting ISABEL in April 2021. This new access procedure combines two steps consisting of preliminary experiments in moderate fields at the following selected regional facilities,

- Superconducting magnet laboratory, University of Nottingham
- Oxford Centre for Applied Superconductivity, University of Oxford
- Nicholas Kurti High Magnetic Field Laboratory, University of Oxford
- Laboratory of Low Temperatures and High Magnetic Fields, Universidad Autonoma de Madrid
- Research Laboratories of the Faculty of Physics, University of Warsaw
- Materials Growth and Measurement Laboratory, Charles University, Prague.
- Research Facilities of the National Institute of Chemical Physics and Biophysics, Tallinn
- Spintronics and Nanomagnetism Laboratory, University of Salento

followed by high-field experiments in EMFL high-field magnets. *Dual-Access* proposals are collected in the frame of regular EMFL calls. The EMFL Selection Committee (SC) in consultation with local contacts at the chosen EMFL site judges the pertinence of the low-field experiments and grants conditional access to the highest magnetic fields at EMFL. For more details of this novel access mode, see the D5.2 report.

2.5. First-Time Access (M12-M60)

Task 2.6 - task leader: U. Zeitler (RU)

This task aims at lowering the barrier for researchers, especially those who are new to the community and at the beginning of their career, to start using the EMFL facilities. The EMFL offers support in preparing the access proposals, reinforced on-site support and reimbursement of travel and accommodation expenses. This allows for increasing the size and diversity of the user community. We introduced and started the *First-Time Access* procedure in early 2022. Over the course of the ISABEL project, we have restructured this access procedure as an access option combinable with all other access procedures, such as *Regular Access*, *Fast Track*, *Long Term*, *Dual* etc. For more details of the novel access modes, see the D5.2 report.

2.6. Technical-Development Access (M12 – M60)

Task added during run time of ISABEL - task leader: T. Herrmannsdörfer (HZDR)

In addition to the description of work of the ISABEL project proposal, triggered by external demand, in October 2022 we introduced and started a further novel access procedure

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 871106

dedicated to the interests of scientists wishing to develop and improve technical installations and metrological procedures that could also be of interest and benefit to other EMFL users: the *Technical-Development Access* evaluated by EMFL's BoD. This task aims at improving the quality of EMFL installations and instrumentation with clear benefit to the wider EMFL user community. For more details of the novel access modes, see the D5.2 report.

2.7. Combined Access

Future access concept involving high magnetic fields at other large EU research infrastructures

For the sake of completeness, we also present another category of access procedure here that we have not yet formally introduced. However, motivated by the outcome of ISABEL's work package 6, we plan to introduce it for users in future. This procedure will cover proposals in which high magnetic fields beyond the field range accessible to commercial superconducting magnets play an essential role as an extreme sample condition for complex experiments carried out at other large European infrastructures such as neutron, X ray, high power laser or THz radiation facilities. There are also two categories in terms of coordination requirements, as in some cases radiation sources are located next to EMFL installations (e.g. FELIX and HFML, ELBE and HLD) while in other cases, scaled or even mobile high magnetic field installations of EMFL labs are in use at the ESRF, the ILL, at LULI, BESSY as well as the European XFEL. We call this procedure, *Combined Access*.

3. Statistics and User Acceptance

During the ISABEL period, from November 2020 to October 2025, the EMFL experienced high demand for experimental time in the highest magnetic fields. Apart from moderate fluctuations in the number of measurement proposals submitted—which correlate with the latest developments in the field of solid-state physics research and related scientific fields, and also depend on other factors, such as the two- to three-year cycles of major international scientific conferences or developments in scientific budgets or travel budgets of respective user groups—there were also global developments that had a direct impact on the operation and user numbers of the EMFL as well as other scientific institutions. The start of the ISABEL project was associated with a number of global challenges. These included, in particular, the COVID-19 pandemic, which began in Europe in early 2020, and Russia's war of aggression against Ukraine, which began in early 2022. Due to the significant mobility restrictions resulting from the COVID-19 pandemic, we were obliged to delay the launch of some access modes as compared to the submitted project schedule, with a delay of six months to a year. Even after their launch, the usage figures for the new access modes may have been lower than expected due to the pandemic. The absence of users from Russian scientific institutions also has a direct impact on user numbers. In addition, the challenges faced by scientists from Ukraine in practicing their profession and traveling, even when working at scientific institutions in other countries, have proportionally reduced the EMFL's usage figures.

As a temporary measure, we introduced ***Remote Access*** and ***Mailed-in Sample Access*** to compensate travel restrictions during the most intensive time of the Covid pandemic in the years 2020 to 2022. These options allowed users to connect remotely via video link instead of

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 871106

having to be physically present in the laboratories, or to simply send in their samples. After the travel restrictions were lifted, we gradually restricted these options again and only considered them in exceptional cases. Both remote and mailed-in sample access require considerable additional working time at the EMFL facilities to implement the projects. At the end of the ISABEL project, both ***Remote Access*** and ***Mailed-in Sample Access*** are only practiced in rare exceptions.

Nevertheless, Table 1, which shows all EMFL's fully recorded usage figures, indicates a high utilization and, in addition, a remarkable acceptance of the newly introduced access procedures. Thanks to the extension of the ISABEL project from 48 to 60 months, we can now look at a more representative selection. In Table 1, we present the full statistics of all proposals submitted to the EMFL, thus providing meaningful insight on the user acceptance.

New access procedures:	**Number of proposals**								
Call:	**1-21**	**2-21**	**1-22**	**2-22**	**1-23**	**2-23**	**1-24**	**2-24**	**1-25**
Regular Access:	130	159	140	147	112	126	120	126	133
Fast-Track Access:				3	11	0	7	8	6
Long-Term Access:				2	0	0	0	0	0
Industrial Access:	No data set in joint EMFL data base, industrial users have addressed requests to lab sites directly.								
Dual Access:	5	4	2	3	8	3	6	12	5
First-Time Access (option):			9	19	20	15	21	21	171
Technical-Development Access:				1	4	2	1	5	3
Combined Access:				6	5	2	3	5	1

Tab. 1: Statistics of proposals addressed to the EMFL extracted from the EMFL data base.

In summary, the EMFL has received the following numbers of proposals, see Table 2, since the first (spring) call in 2021 ("call 1-21") up to and including the first call in 2025 ("call 1-25").

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 871106

New access procedure	Numbers of proposals	During numbers of calls	In average proposals per call
Regular Access:	1193	9	~ 133
Fast-Track Access:	35	6	~ 6
Long-Term Access:	2	6	<1
Industrial Access:	-	4	-
Dual Access:	48	9	~ 5
First-Time Access (option):	122	7	~ 17
Technical-Develop-ment Access:	16	6	~ 3
Combined Access:	22	6	~ 4

Tab. 2: Summarized statistics of proposals addressed to the EMFL

In this context, it must be taken into account that, apart from *Regular Access which is counted since the establishment of the EMFL*, only *Dual Access* started at the beginning of ISABEL, followed by the *First-time Access Option* in Call 1-22. All other modes started in Call 2-22.
In the runtime of ISABEL, we received 123 new access mode proposals on top of 1193 regular proposals and thus record an increase of about 9%. If we had been able to offer all new access procedures throughout the entire term and if these had been used on average, we would even expect an increase of 14% as a result of introducing the new access procedures, as was the case at the end of the ISABEL project term. If we then take into account the influence of the *First-time Access Option*, this figure increases further. Although this does not necessarily mean a doubling to 28% as the bare numbers given in Tables 1 and 2 might suggest, as the *First-Time* option can be used in combination with other modes, the attractiveness of this option is nevertheless beyond question.

4. Final Evaluation of EMFL's novel access procedures

Subsequent to their test period in the term of the ISABEL project, we evaluate the user acceptance of all novel access procedures.

4.1. Fast-Track Access procedure (M12 – M60)

On average, the EMFL has received about six *Fast-Track* proposals in the period between two calls. As the *Fast-Track Access* is the only proposal selection procedure that is decoupled from the biannual modus with two proposal submission deadlines on May 15 and November 15, the submitted proposals are assigned to the respective subsequent call. Almost all applications

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 871106

were successful. The urgency of the scientific projects prompted the BoD to approve and implement them quickly. Continuing with the *Fast-Track* mode is recommended.

4.2. Long-Term Access mode (M12 – M60)

In response to six calls, the EMFL received only 2 proposals for *Long-Term Access*. It also turned out that one proposal did not meet the criteria for granting Long-Term Access and the other proposal was probably submitted as a *Long-Term Access* proposal by mistake. We therefore do not consider it worthwhile to continue with this newly introduced mode.

4.3. Industrial-User Access mode (M12 – M60)

During the runtime of ISABEL, the EMFL has made many efforts to increase its attractivity for industrial users and the ISABEL project team has processed a separate work package, WP3 *Bridging the industrial gap*, and prepared a special access mode for industrial users. At the EMFL sites in Grenoble, Toulouse, Nijmegen and Dresden, there has indeed been an increase in inquiries from industrial users. However, these inquiries did not relate solely to the provision of the highest magnetic fields, which we could easily quantify based on the number of proposals received. In many cases, industrial companies are more interested in a mix of expertise and services related to magnetic measurement methods, material property analysis, electrical engineering, multiphysical modelling, special topics in high-performance electrical engineering, applied superconductivity, and ultimately the generation of moderate magnetic fields in larger volumes. In addition, we noticed quite different levels of confidentiality requirements among individual companies. Despite the provision, announcement, and maintenance of EMFL-wide industrial access, a large number of companies made individual inquiries to the four EMFL laboratories or to the coordination team, whose email address is on the contact page of the website. In this case, the ILO would then take over the request, to get the information needed, then would present the inquiry to the BoD so that it could be evaluated which EMFL team would be most able to work with the industrial user. For this reason, we are unable to provide a definitive figure for the number of industry proposals received at this point. We can, however, provide a figure for the numbers of the different types of collaborations with industry that happened during the last four years. We are also considering whether to continue with this access mode and / or to replace it or supplement it with a pronounced willingness - communicated even more strongly than before of the ISABEL project - on the part of EMFL laboratories to collaborate with industrial users, since industrial users are most likely to contact directly the contact they already have or the contact email address on the website.

Indicator	LNCMI-G (since 2019)	LNCMI-T (since 2019)	HLD (since 2020)	HFML (since 2020)
Research collaboration contratcs	6	8	6	0
Material transfer agreements	4	2	-	0

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 871106

Non-disclosure agreements	9	6	13	0
Service provision contracts	8	8	2	1

Tab. 3: Statistics of types of contracts with industrial partners

4.4. Dual-Access procedure to regional partner facilities and to EMFL (M1-M60)

The introduction of *Dual Access* has resulted in 48 additional submissions during 9 calls, i.e., more than 5 proposals per call. For this reason, we therefore consider the continuation of *Dual Access* to be very attractive and recommendable. Without any doubt, *Dual Access* has fostered the collaboration of EMFL sites with regional partners with strong benefits for users. On closer inspection, this access mode could be refined. In particular, feedback on the outcome of performed low field measurements (step 1) should be used even more to ease the decision on whether or not to continue the study at very high magnetic fields (step 2). A well-thought-out improvement concept might motivate users to fully use the potential of *Dual Access*, e.g., to use more often the second phase of experiments at EMFL labs and to timely publish their results.

4.5. First time access (M12-M60)

The *First-Time Access* option was the mostly used new access procedure. In 7 calls, we counted 122 cases of *First-Time Access*. In average it was used 17 times per call. It is therefore clearly advisable to continue with this access option. The usage figures show that access to the EMFL is being used by a steady stream of new young scientists. We consider supporting them to be an essential contribution of the EMFL to education and career development.

4.6. Technical-Development Access (M12 – M60)

Although the introduction of the *Technical-Development Access* mode was not planned from the outset, its concept quickly proved to be profitable for users and the EMFL installations. The 16 proposals submitted for the development of metrological infrastructure and improved sample environment during six calls, i.e. just under three proposals per call, show that EMFL scientists and external colleagues are not only interested in obtaining measurement time to produce the latest scientific results, but also want to use their expertise to further develop the facilities. We highly recommend continuing with this access mode.

4.7. Combined Access

During the planning phase and for much of the ISABEL project period, the ISABEL team had no intention of recording proposals that fall under the category of *Combined Access* separately as such. However, based on the work carried out in work package 6 of the ISABEL project resulting in a roadmap for the development of high magnetic fields at advanced sources (see delivery report D6.3), the coordinated approach for realizing complex high-magnetic field

This project has received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 871106

experiments at other large EU research infrastructures became more and more meaningful. It became apparent that the frequency of use of *Combined Access* proposals has increased in recent years and that the EMFL database has already been capable of recording them. We have therefore decided to count them in future and report the numbers counted in the last 6 calls of ISABEL. All in all, we have received 22 *Combined Access* proposals, i.e. about four per call. The realization of future *Combined Access* will be associated with the coordination between infrastructures, a possible synchronization of proposal calls, the harmonization of access rules, and joint scheduling of scarce resources. This is precisely why we consider the future establishment of this access mode to be particularly important, even if it is ambitious.

5. Summary

We have prepared this report as a basis for decision-making to assist the Board of Directors in determining how and whether the proposed selection of access modes to the EMFL, which have been introduced and extensively tested in ISABEL, should be continued, modified, or discontinued. In a nutshell, we have identified the following suggestions.

- ***Fast-Track Access*** has proven to be an efficient and well-accepted procedure for time-critical research projects. Continuation of this mode is strongly recommended.
- Due to its minimal uptake and high potential cost, continuation of the ***Long-Term Access*** mode is not recommended.
- While industrial interest in EMFL capabilities has clearly grown, the current ***Industrial Access*** structure does not fully meet industry expectations. Rather than the access to high magnetic fields, a mix of expertise and services related to metrology, material analyses, electrical engineering, modelling, and applied superconductivity is requested by industry. We recommend to modify this access mode accordingly.
- ***Dual Access*** has proven to be a valuable and attractive mode that fosters scientific synergy. Its continuation—potentially with refined guidelines and user incentives—is strongly recommended.
- ***First-Time Access*** has become a cornerstone of EMFL's outreach and educational mission. It should definitely be continued as a vital entry point for young researchers.
- ***Technical-Development Access*** has proven mutually beneficial for users and EMFL installations. It should be maintained and possibly expanded.
- The future concept of ***Combined Access*** is a forward-looking and strategically important mode. Despite its complexity, it holds great promise for advancing interdisciplinary, cross-infrastructure research and might be an attractive future option. We recommend its formal introduction.