

Coordinated Research Infrastructures Building Enduring Life-science services - CORBEL -

Deliverable D5.3

Strategy for expanding application of common access model based on feedback from WP3 and WP4 pilots

WP5 – Enabling common solutions for user access

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Executive Summary

The aim of CORBEL work package 5 was to identify common practices with respect to access provision within the life science research infrastructures which could benefit from harmonisation, and to develop standardised methods and processes to achieve harmonisation with a common access model. To this end we have produced an application submission, peer review and access management model by extending the ARIA software to multiple research infrastructures and used this model to manage and run the CORBEL Open Calls from work packages 3 and 4. We also ran a pilot authentication and authorisation infrastructure (AAI) for the life science researchers which would enable them to use a single identity to login and use services from the spectrum of connected life science infrastructures. We have created a network of quality management experts and defined a set of common principles for quality management within life science research infrastructures. Results from surveys sent to participants in the CORBEL open calls, both applicants and service operators, showed a positive response to the ARIA implementation in the open calls. The ARIA software was improved between the first and second open call in response to feedback, especially the provision of support and the user friendliness of the interface. Further improvements have been made since the second call in response to the second call feedback including improvements to the messaging system and to the management of projects post approval. We present options which can be pursued for user projects which span multiple infrastructures after the end of the CORBEL project and note that infrastructures can also use these features in isolation to manage single research infrastructure access. A number of CORBEL infrastructures have already decided to use ARIA for their access management in this way. We describe a strategy for expanding adoption of the access models in ARIA developed through CORBEL in a sustainable way. To ensure feedback from the wider community continues to influence and improve ARIA, an ARIA user group has been formed with "power-user" representatives including those from CORBEL infrastructures to continue the process of RI requirements feeding into future ARIA developments. The user group's role is to identify new requirements or improvements and to prioritise these improvements. We also consider future work in the areas of AAI and quality management both of which were initiated under CORBEL. Building on the achievements during CORBEL, the results and future efforts on life science AAI and quality management will continue within the EOSC-Life project.

Project objectives

With this deliverable, the project has reached/this deliverable has contributed to the following objectives:

- a) To establish an infrastructure platform that integrates ESFRI services for life sciences.
- b) To build the framework for transnational open user access for the sustainable use of shared services.
- c) To identify common processes amongst access models where standardisation might be achieved.
- d) To implement specific standardised processes or methods in the access model, test their compatibility in the individual RIs and in the use cases and receive feedback from the users involved.
- e) To investigate a framework for a coherent single access route to all research infrastructures through a shared access framework.

Detailed report on the deliverable

Background

CORBEL work package 5 (WP5) has identified areas of commonality for the management of access to research infrastructure in deliverable D5.1 [1]. Following the assessment of the needs of infrastructures, and working closely with the use cases from WP3 and WP4 facilitated through the CORBEL open calls, adaptations were made to the Access to Research Infrastructure Administration (ARIA) software to allow for and streamline the process of management of access to multiple research infrastructures in the life science domain to enable complex, interdisciplinary research projects [2]. The feedback from these calls was continually used to improve all aspects of the pipeline, in the handling of such projects from initial application, through peer review, to management of the infrastructure access and feedback on completed access. In addition to the application and access management software ARIA, there were two other key areas of focus for the WP5 common access framework: unified identity management through a common authentication and authorization infrastructure for the life science research infrastructures, and harmonised quality management practices to ensure consistent and high standard access delivery. In this deliverable we consider the “expansion” of the common access framework developed within WP5 both in time, and in scope, after the conclusion of the CORBEL project. We look at the sustainability of each element of the framework developed within WP5, including its future evolution.

Description of Work

As noted in deliverable D5.2 [2], the CORBEL open calls demonstrated a clear demand and provided use cases for common access to the Life Science research infrastructures. While this work has been possible within the CORBEL project, as the project draws to a close similar cooperation between infrastructures in the future requires additional agreements, personnel effort and funding either from the participating infrastructures themselves, or from external sources, to continue [3]. ARIA retains the flexibility to support inter-RI access where collaborations are present between infrastructures and can also be used by infrastructures in isolation, thanks to the functionality developed to establish the common access model in CORBEL. By using common principles and workflows for managing access within ARIA, even without explicit collaboration agreements between infrastructures, it is easy for a user of one infrastructure to seamlessly become a user of another infrastructure. This was the key objective for the implementation of ARIA within CORBEL.

Feedback on common access framework

ARIA implementation

Following the CORBEL open calls, organised by work package 4, surveys were circulated to both users, and service providers, on various aspects of the open call. In D5.2 we presented the changes made to the ARIA system between the first and second open call to respond to the feedback received and iteratively improve the common access framework. In this section we give a brief overview of the responses relating to the ARIA implementation and explain how this feedback is and will continue to direct ARIA development efforts in the future.

Responses to the survey relating to ARIA and the application and review processes are shown in Figure 1 and full survey data is included in Appendix 1: Combined results from the CORBEL Open Call Application Surveys (WP4/WP5). For each category, where respondents had used a particular feature, they were asked to rate it on a scale of 1 to 5 where 1 – very poor, 2 – poor, 3 – average, 4 – good, 5 – very good. All categories showed a mean score above 3 indicating a positive experience with the ARIA system and common access model as implemented. Responses show that aspects which were strongest were the support (68%), user friendliness (67%), and application (76%) and review (80%) processes which scored highly with the indicated percentages of respondents rating these aspects of the access model either good or very good. CORBEL effort in the period between the two open calls had focussed on improving support by producing additional help materials [4, 5, 6, 7] and improving the user friendliness of the interfaces, especially for service providers, by replacing the administration/management interfaces in ARIA version 2 (see D5.3 for more details on specific improvements made [2]). Feedback showed that ARIA support (where used) and user friendliness had improved greatly between the first and second call with an increase in responses from 64% to 75% very good or good ratings for support and an increase from 59% to 86% very good or good ratings for user friendliness between the first and second open call.

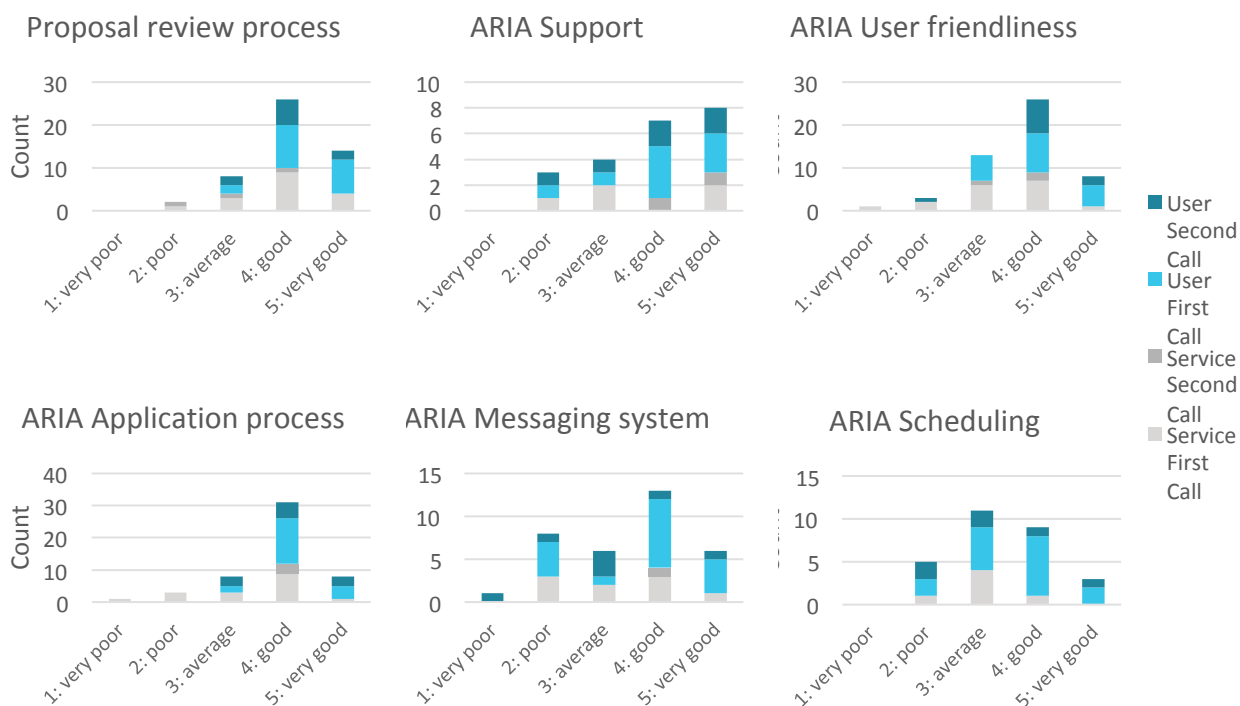


Figure 1: Responses to the Open Call surveys relating to ARIA and the review process

Areas which were less highly rated were the ARIA messaging and scheduling functions where only 56% and 43% rated the aspects very good or good. Following the closing of the open calls and in response to the survey and other user feedback highlighting these areas as targets for improvement, the ARIA messaging system, and the visit management system (the part of the workflow post-approval of a project where the scheduling function was managed) have been developed and refactored (ARIA release versions 2.2 and 2.3 respectively). In ARIA version 2.2 the messaging system was integrated with email so that ARIA users can reply to messages instantly, straight from their usual email client, and have them automatically added to the correct ARIA message thread without

having to go through the ARIA interface. In ARIA version 2.3 the visit management system was completely rewritten to allow each access visit to a research infrastructure facility or node to have one or more sessions within it, these sessions having optional workflows with fully customisable steps, which can include booking steps which replace the former scheduling functionality but are no longer compulsory in a visit. As with other areas of the ARIA system, through CORBEL we have introduced more customisability to enable the same common system to better flex to the specific needs of individual research infrastructures and their facilities/nodes. This includes options to include or exclude certain functionalities which may not be appropriate for every RI indication.

Demand for unified access to multiple research infrastructures

In addition to the feedback surveys for the individual open calls, work package 4 circulated surveys to both applicants and service operators to collect information about the overall experience of the CORBEL open calls and the outcomes of their projects [8]. These surveys were sent close to the end of the projects, at the point at which successful CORBEL open call projects would be either completing or preparing to continue as collaborations after the CORBEL project. Questions in this survey did not relate directly to the ARIA platform, but did gather feedback on the access to multiple RIs provided through the open calls. A more comprehensive analysis of the results of these surveys are presented in D4.3 “Report on impact of integrated access standards test for open user access”. The conclusion is that there is a demand for common access to research infrastructures, and that this common access offers positive outcomes for researchers and service providers, and enables high impact research.

Work Package 4 Collaboration Agreements

ARIA software was highlighted by CORBEL WP4 in their sustainability plan D4.2 “Sustainable plan for user access to common RI services for 4 use case cross-ESFRI BMS research infrastructure pipelines” [3] as a key recommendation to enable service provision beyond the CORBEL project. Another recommendation in the same report is that the infrastructures establish bilateral collaboration agreements to sustain frequently requested pipelines. These two recommendations can go hand-in-hand here where pairs of infrastructures can agree to support future joint activities, such as access, through a collaboration agreement, and then manage the access through ARIA. As noted by WP4, a major obstacle to joint service provision beyond CORBEL is a lack of funding for providing the access, to support staff time, consumables, travel and other associated costs. Where funds can be obtained to support joint access provision, or where access provision can fit within existing core budgets of infrastructures, ARIA provides convenient solutions to manage joint access. So far to date WP4 has helped to develop three bilateral collaboration agreements between Instruct-ERIC and Euro-Bioimaging ERIC, EU-OPENSREEN ERIC and Euro-Bioimaging ERIC, and EMBRC-ERIC and Euro-Bioimaging ERIC [9], with further discussions ongoing between additional pairs of infrastructures. Of those pairs of infrastructures which already have collaboration agreements in place, Instruct-ERIC Euro-Bioimaging ERIC and EU-OPENSREEN ERIC already use versions of the ARIA software. Other infrastructures within the CORBEL cluster are in discussions with Instruct-ERIC about adopting ARIA within their infrastructure.

Three ways to implement cross-RI applications in ARIA

Given the demonstrated value, and positive feedback from service providers and applicants on the common access model validated through the CORBEL open calls in ARIA, we now explore three

technical implementations which can allow research infrastructures to combine forces and jointly provide access after the CORBEL project has concluded and take advantage of the processes and software developed in the frame of the CORBEL project.

1. Host a joint call with bespoke forms

For infrastructures who have decided to collaborate together to provide joint access there are multiple methods through which this could be achieved. One option would be to open a combined call for access, or access route. This is analogous to the method used to arrange the CORBEL open calls. Form fields for all aspects (proposal, review, technical evaluation, feedback) could then be constructed specifically for the combined call.

2. Let the researcher decide: Intelligent forms allow applications to be tailored to the requested infrastructures and technologies

Alternatively, forms can be constructed according to what is being applied for. A combined catalogue could be constructed for the collaborating infrastructures where the user has the freedom to decide which services they require for their project. The services selected will determine which infrastructures are involved, and an application form will be constructed requesting the information needed from those infrastructures as demonstrated in Figure 2. Where infrastructures request the same information (e.g. scientific background) the form construction ensures that the information is only requested once without duplicated fields.

The diagram illustrates the process of combining forms from two different research infrastructures into a single joint application form. On the left, two source forms are shown:

- Research Infrastructure A:** Contains fields for Title, Scientific background, Relevant publications* (with Upload CSV and Search Q buttons), Safety concerns (radio buttons for Yes/No), and Upload letter of support (with Choose Files and Maximum file size: 100 MB).
- Research Infrastructure B:** Contains fields for Title, Scientific background, Expertise with requested technologies (Please select dropdown), Publications (with Upload CSV and Search Q buttons), and Translational relevance.

On the right, the **Joint application** form is shown, which is a combination of the two source forms. The fields included are:

- Title
- Scientific background (merged from both source forms)
- Publications* (with Upload CSV and Search Q buttons)
- Safety concerns (radio buttons for Yes/No)
- Upload letter of support (with Choose Files and Maximum file size: 100 MB)
- Expertise with requested technologies (Please select dropdown)
- Translational relevance

A large bracket on the right side of the source forms indicates that their fields are merged into the joint form. The joint form contains fields from both source forms, but where fields are identical (like 'Scientific background', 'Safety concerns', and 'Upload letter of support'), only one copy is included.

Figure 2: Illustration of how ARIA can combine forms from different infrastructures to make a joint form. Fields from both forms are included but where fields are the same or have the same parent field, only one copy is included on the joint form.

3. Share applications between infrastructures when required

Post-submission transfer of applications between infrastructures within ARIA is also possible. In the case in which a user applies to infrastructure A, then later it becomes clear that access to a service from infrastructure B is required for the project, a new access to infrastructure B can be added to the same proposal. This process requires manual intervention and gaining the consent from the user and infrastructures involved to transfer proposal information to the second infrastructure (ensuring GDPR compliance and full transparency along the way), and potential decisions about whether infrastructure B needs to re-review the proposal, or if the reviews of infrastructure A can be honoured.

Managing cross-RI access

When the projects reach the stage where the access has been approved and is being carried out, individual RI facilities will be able to manage the progress of their part of the project in ARIA. They can choose the level of granularity of the access management, from simply reporting access as “done” to fully itemising workflow steps and checking them off along the way. They will have a single management page per access from which they can check off steps, report outcomes, send messages, and view proposal details and the home lab researcher team.

Integrated messaging keeps all the necessary participants in the loop

Messaging options linked to proposals and individual accesses allow simple messaging of relevant groups of people associated with that piece of work. Options to contact administrator on a proposal would automatically copy in the administrators for all access routes (which could be routes for different infrastructures or a shared route) into a single thread within the ARIA messaging system. Thread responses are also sent by email to thread participants, who can also reply to the thread email directly and have their reply integrated into the ARIA thread. When staff members come and go, message thread participants are automatically updated so the message history is handed over to new staff members and no conversation history is lost.

Sustainability of the ARIA Software Platform

ARIA is a key service of the Instruct-ERIC structural biology research infrastructure and, as such, ARIA is included within the business plan of Instruct-ERIC. ARIA development personnel are funded from a combination of core Instruct-ERIC budget (from member state contributions) and from external grants for project-related work. Instruct-ERIC currently has 14 member states/international organisations and the number of members has increased since the establishment of the ERIC in 2017. Instruct-ERIC members provide funding commitment to Instruct-ERIC, renewed every 5 years, thereby ensuring a predictable income to support Instruct-ERIC. Use of ARIA by external organisations includes setup by Instruct-ERIC personnel and ongoing ARIA technical support and maintenance. ARIA covers these costs with setup and subscription fees for the core ARIA platform. Additional charges are made for bespoke development work. Charging to cover costs allows the service provided to external organisations to be financially sustainable.

Stability of the ARIA Software platform

Currently hosted on servers based in Oxford UK, Instruct-ERIC has a migration plan underway to migrate ARIA services to a cloud hosted platform. This should increase the long-term stability and security of the system and allow for expansion as necessary as ARIA grows.

Over the course of the CORBEL project, the ARIA development team has put into place new systems to ensure better reliability of software released, in alignment with other CORBEL work package 5 work on quality management. Any new code developed would be first subject to code review by another developer on the team before entering the testing phase. The ARIA team recruited a full-time quality assurance engineer whose role was to test all new developments after code review through a combination of manual and automated testing processes. In addition to the testing processes, documentation for the software has been increased, and unit tests written for existing and new functionality.

ARIA User Group: Including Research Infrastructure voices to prioritise development work

A group of super-users of ARIA has been established to ensure that the needs of the diverse user community of ARIA are met and so that ideas from outside of Instruct-ERIC continue to feed into the ARIA development plan beyond the CORBEL project. The first meeting of the ARIA user group was held back-to-back with the CORBEL ARIA workshop, organised by CORBEL WP5 and supported by CORBEL WP9. This face to face meeting established a community of the user group members who represented infrastructures (some of which are from within the CORBEL cluster), individual scientific facilities, and projects offering transnational access. The user group will meet three times per year, mostly by teleconference but with face-to-face meetings to be arranged back-to-back with other ARIA workshops. Activities of the user group will involve the review of new ARIA functionality delivered by the ARIA development team, identifying functional needs to be addressed with future development, prioritising feature requests and assisting the ARIA development team with the specification for new features.

Expanding adoption and streamlining the Research Infrastructure ARIA onboarding process

Promotion of ARIA

In order to expand adoption of ARIA in research infrastructures, the ARIA team participate in a number of outreach and engagement activities. During the CORBEL project, the project itself and its events formed a key platform for expanding the knowledge of ARIA and its (growing) capabilities. Beyond CORBEL, the ARIA team will continue to present ARIA at research infrastructure events, presentations at conferences attended by infrastructures and their nodes e.g. Core Technologies for Life Sciences (CTLS) [10].

In addition to participating in external events, ARIA will continue to host ARIA workshops which have previously been supported by the CORBEL project. These workshops provide a unique opportunity for users to interact face-to-face with the development team, gain individual support/troubleshooting for their problems and learn how to make the most of new features. It also provides an additional source of valuable user feedback to the development team which can be incorporated into the ARIA development plan.

ARIA launched its own twitter page @ARIA_access [11] in May 2019 increasing its social media presence and providing another way for users and potential users to find out more and get in touch. We also provide information about the ARIA platform in publications including project deliverables, on the ARIA website aria.structuralbiology.eu [12].

Consultations and demos

We offer all potential users of ARIA a consultation to discuss how ARIA can meet their infrastructure needs. Consultations involve a background presentation on ARIA and can also include live demos where appropriate. After an infrastructure has opted to use ARIA, the ARIA team offer setup consultation and support to get the final configuration right and get them up and running.

ARIA Beta

Access to a beta version of ARIA is available on request for potential users to try out the system. ARIA beta offers active role selection to allow testing functionality as user types with different rights and permissions.

Establishing data processing agreements

Instruct-ERIC has developed processes for onboarding new research infrastructures to the ARIA platform to ensure GDPR compliance and to get them up-and-running. These processes are becoming further streamlined as ARIA moves to electronic handling and management of the data processing contracts to make it quicker and easier for new infrastructures to get started with ARIA.

Life Science AAI

Within the CORBEL project and as described in D5.2 [2], a pilot Authentication and Authorisation Infrastructure (AAI) for the life science research community was tested. The pilot involved the assembly of a group of e-infrastructure component providers EGI, EUDAT and GÉANT, who worked together to build a working pilot AAI, and was carried out with the assistance of the AARC2 project [13]. The life science research infrastructure community provided technical and operational requirements which would meet their needs, and the needs of the relying services in their infrastructures [2, 14]. These requirements were delivered within the CORBEL project and the work was then handed-over to the EOSC-Life project [15] who would take the requirements specifications built under CORBEL and use them to create a production Life Science AAI service [14]. The strategy for the sustainability of the life science AAI production service is included in the description of work of EOSC-Life. Work within EOSC-Life has already begun to define a governance and decision making structure for a sustainable life science AAI, develop migration strategies from existing research infrastructure AAIs, and compose data protection strategies and policies to ensure the compliance with GDPR and other applicable law, whilst allowing for the AAI to scale.

Quality Management

Harmonising access to the life sciences research infrastructures raises the question about comparable levels of quality and reliability of the outputs of the different RIs, even more so when outputs of one RI become inputs to another RI, as is possible in the cross-RI service pipelines piloted in CORBEL WP3 and WP4.

WP5 therefore established a CORBEL Quality Management Expert Network to discuss a common approach of the life science RIs towards quality management (QM) as part of the general common access framework. As revealed in D5.1, the life science RIs offer a wide scope of services, ranging from physical resources, remote and direct access to analytical platforms as well as virtual access to data and data analysis services. To prescribe a singular QM approach or solution that is applicable to all of these services in all life science RIs participating in CORBEL is not realistic. Even more so since

the life sciences RIs are all distributed organisations, hence even the different partners in a given RI usually apply different QM solutions tailored to their specific needs (see also WP9 Webinar “Quality Management in Distributed Research Infrastructures”¹) [16].

The CORBEL QM Network therefore rather discussed common QM principles that all life science RIs could endorse. The life science RIs acknowledge their role in the continuous development of community standards and references in the area of biomaterial and reagents, technology platforms, operations procedures, data collection and data processing. To ensure that these standards are widely and consistently applied, the life science RIs all endorse the principle of applying quality management systems that ensure that the resources and services that they offer to the European biomedical research community are of highest quality, produce reliable, traceable and reproducible outputs that are consistent across centres and are compliant with the regulatory environment.

While a one-size-fits-all solution for quality assurance and control that is applied by all BMS RIs is not feasible for the reasons stated above, the life science RIs participating in CORBEL nevertheless endorsed a common set of QM “core principles” that is described in the position paper “A framework for quality management in the biomedical research infrastructures (BMS RIs)” [17]. To ensure the sustainability of the QM Framework, a specific activity in the EOSC-Life project [15] allows for a further development and refinement of the framework, particularly in the context of ongoing “digitisation” of RI service provision.

Next steps

Moving towards an API-centric architecture to improve integration of ARIA with external software

To further improve the interoperability of the ARIA software solutions developed within CORBEL with other external software systems which may be in place within other research infrastructures or their nodes or facilities, work is beginning on a new architecture for ARIA. The new architecture will be based upon providing all ARIA data over application programming interfaces (APIs). The ARIA application itself will be a consumer of these APIs and will use them to send and receive data, but the method also allows ARIA to both send and receive data from other software via these APIs. The potential benefits of this for the interoperability of research infrastructures is vast. First of all it could be used to feed ARIA data automatically into a common service catalogue for research infrastructures such as the one being developed within the Horizon 2020 project CatRIS [18], or indeed into the legacy CORBEL catalogue for RIs in the CORBEL cluster which has been migrated to a permanent home at lifescience-ri.eu [19]. Infrastructures who have alternative access management software in place or have self-hosted their own instance of ARIA may be able to use the APIs to share project and proposal data with each other in a similar way to option 3 presented in this deliverable which is currently only possible within the cloud version of ARIA.

¹ <https://www.corbel-project.eu/webinars/quality-management-in-distributed-research-infrastructures.html>

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Abbreviations

Abbreviation	Definition
AAI	Authorisation and Authentication Infrastructure
AARC2	Authentication and Authorisation for Research and Collaboration
API	Application Programming Interface
ARIA	Access to Research Infrastructure Administration
BMS	Biological and Medical Sciences
CTLS	Core Technologies for Life Sciences
EGI	European Grid Infrastructure
EOSC	European Open Science Cloud
EOSC-Life	A cluster project from the life science research infrastructures expanding digital biology in Europe funded by the European Union’s Horizon 2020 research and innovation programme under grant agreement No 824087
ERIC	European Research Infrastructure Consortium
EU-OPENSREEN	European research infrastructure for screening and medicinal chemistry
EUDAT	European data infrastructure
Euro-Biolmaging	European research infrastructure for advanced biological imaging technologies
GDPR	General Data Protection Regulation
GÉANT	Pan-European network for research and education
Infrafrontier	European research infrastructure for phenotyping and archiving of model mammalian genomes
Instruct	European research infrastructure for structural biology
QM	Quality Management
RI	Research Infrastructure
WP	Work Package

Delivery and schedule

The delivery is delayed:

No

Adjustments made

None

Appendices

Appendix 1: Combined results from the CORBEL Open Call Application Surveys (WP4/WP5)

Second Open Call User

Please select all the service providers you have been granted access to

	Option	Count
	<i>Advanced Light Microscopy at EMBL</i>	6
	<i>Biobank and biomolecular resources at BBMRI-ERIC</i>	0
	<i>Bioinformatics Platform at BIMS/MDC</i>	0
	<i>Biological Research Foundation Academy of Athens BRFAA</i>	1
	<i>Biomedical Imaging Group Rotterdam (BIGR), Erasmus MC</i>	0
	<i>BioStudies Database</i>	1
	<i>Cell Microscopy (CMC) at University Medical Centre Utrecht</i>	1
	<i>Chemogenomics (ChEMBL) at EMBL/EBI</i>	1
	<i>Clinical research advice at ECRIN-ERIC</i>	0
	<i>CNRS Marine Observatory of Banyuls-sur-mer, France</i>	0
	<i>CNRS Marine Observatory of Villefranche-sur mer</i>	1
	<i>CNRS Marine Station of Roscoff, France</i>	0
	<i>CORBEL Image Processing at CNB-CSIC/Instruct</i>	1
	<i>ICFO - The Institute of Photonic Sciences</i>	0
	<i>Marine Biology Facility, EMBL</i>	0
	<i>Marine Laboratory at Stazione Zoologica Anton Dohrn</i>	0
	<i>Mesosopic Imaging Facility, EMBL Barcelona</i>	0
	<i>Molecular Cell Physiology, Vrije University Amsterdam</i>	1
	<i>Mouse mutant phenotyping at German Mouse Clinic (GMC), HMGU</i>	0
	<i>Non-vertebrate Genomics at ELIXIR</i>	0
	<i>Protein Data Bank in Europe (PDBe)</i>	0
	<i>Scottish Oceans Institute at St. Andrews University</i>	0
	<i>Screening Unit and Medicinal Chemistry group, Leibniz-Forschungsinstitut für Molekulare Pharmakologie, FMP</i>	5
	<i>Structural Biology at Instruct Centre - CERM/CIRMMP</i>	2
	<i>Theoretical Systems Biology at DKFZ</i>	0
	<i>Translational medicine advice at EATRIS-ERIC</i>	0
	<i>Other</i>	1
	<i>Number of responses</i>	12

How did you hear about the CORBEL Open Call?

	Option	Count
	<i>Research Infrastructure website</i>	0
	<i>Announcement in journal</i>	0

<i>Announcement at conference</i>	2
<i>Direct mailing from infrastructure</i>	2
<i>Direct mailing from other sources</i>	0
<i>Social Media (LinkedIn, Research Gate, Twitter)</i>	1
<i>Personal contact</i>	7
<i>Other</i>	0

Number of responses 11

How do you rate the information provided on the CORBEL Open call webpages with respect to the following point: instructions given

<i>Option</i>	<i>Count</i>
<i>1: very poor</i>	0
<i>2: poor</i>	0
<i>3: average</i>	2
<i>4: good</i>	7
<i>5: very good</i>	2

Number of responses 11

How do you rate the information provided on the CORBEL Open call webpages with respect to the following point: ease of use

<i>Option</i>	<i>Count</i>
<i>1: very poor</i>	0
<i>2: poor</i>	0
<i>3: average</i>	6
<i>4: good</i>	4
<i>5: very good</i>	2

Number of responses 12

How do you rate the information provided on the CORBEL Open call webpages with respect to the following point: level of detail

<i>Option</i>	<i>Count</i>
<i>1: very poor</i>	0
<i>2: poor</i>	0
<i>3: average</i>	4
<i>4: good</i>	7
<i>5: very good</i>	1

Number of responses 12

Please comment in general on the content of the CORBEL Open Call webpages. Let us know how we can improve!

Response

It would be useful to add the possibility to contact directly the hosting facility

Link to ARIA application is somewhat hidden, this lead to confusion in the application process.

The content of the CORBEL webpages is clear. Maybe, it would be nice to better define the costs that are covered by CORBEL. For instance, costs related to the instrument time is not covered.

I did not find easy to contact research infrastructures to discuss experimental plan and feasibility before submitting the proposal

I would like to highlight the great help I received from the organizing team.

I believe that the functions are all there in principle. However, the main improvement I believe could be done on the initial contact and first steps of aria. I remember it complicated to know where to go/click initially. how to login etc. That should be trivial and can be made much more accessible.

The structure of the application process on a webpage makes it a bit more difficult than "normal" grant applications ...

I had some trouble to find which RIs were the most appropriate for my project. Thanks to the help of the managers, I took my decisions. I would like to add that I think it is not necessarily a good point to group several RI in packs. I think that it could be more efficient and productive to choose individual RIs.

Information about service providers was not adequate. Few service providers are not updating their information and listed services are not provided by them. Often this is frustrating as we design our project based on services available on the website and once contact phase start, service providers inform us that they can't provide certain services. Contact/technical feasibility process is time consuming due to poor availability of service providers or little information available about their services/techniques/domain expertise.

Number of responses 9

Did you contact the project managers ahead of the application submission and if so, was this helpful for you?

	<i>Option</i>	<i>Count</i>
	<i>Yes I did, it was very useful</i>	8
	<i>Yes I did, it was useful</i>	2
	<i>Yes I did, there was no benefit</i>	0
	<i>No I did not</i>	2
<i>Number of responses</i>		12

Please comment your choice:

Response

It was useful to contact them in the first phase of the submission, however it would have been useful to discuss more in detail the experimental setup in the second phase of the project, i.e. before going to the facility.

Project managers were extremely helpful in project preparation, helped to find contact persons at facilities and with technical issues with the ARIA portal.

I contacted them in order to get in contact with the research infrastructures to discuss

experimental plan and feasibility before submitting the proposal, as required by the call

In fact I contacted the EuroBioimaging group to ask for information and I was informed of the CORBEL call for industry, which I didn't know. The help I received afterwards during the whole application process was key for me to actually be able to apply.

I got useful critical feedback and assessments about project.

I had helpful discussions on which aspects of the project were feasible.

I contacted several times the project managers. I got excellent help from them regarding scientific advice, encouragements, RIs etc. I am very grateful because I had many doubts during and after the application process.

We were in direct contact of service providers.

Number of responses 8

You had to get in contact with your preferred service providers ahead of your application submission. Do you think it affected the quality of your application?

<i>Option</i>	<i>Count</i>
<i>Yes, it really helped</i>	5
<i>Yes, it helped</i>	4
<i>No, it had no effect</i>	0
<i>Number of responses</i>	11

How long did it take you to find all information you needed to prepare your application?

<i>Option</i>	<i>Count</i>
<i><1 hour</i>	1
<i>2 - 4 hours</i>	3
<i>4 - 6 hours</i>	1
<i>6 - 8 hours</i>	4
<i>>8 hours</i>	3
<i>Number of responses</i>	12

What were your reasons for applying to CORBEL? Selection of multiple answers is allowed.

<i>Option</i>	<i>Count</i>
<i>technical competence/expertise not available in your home institution</i>	10
<i>financial support to conduct your project</i>	9
<i>access to instruments/technologies</i>	9
<i>access to samples/materials not available in your institution/country</i>	2
<i>ensuring high quality standards for your data/results</i>	4
<i>finding new industry and academic collaborations</i>	1
<i>independent evaluation of your project</i>	0
<i>Other</i>	0
<i>Number of responses</i>	11

The Open Call gave you the opportunity to apply to multiple RIs at once. How useful do you rate finding the key information about all RIs in one place?

	<i>Option</i>	<i>Count</i>
	1: very poor	0
	2: poor	0
	3: average	2
	4: good	6
	5: very good	4
<i>Number of responses</i>		12

Do you prefer a single application over multiple separate applications?

	<i>Option</i>	<i>Count</i>
	Yes	9
	No	3
<i>Number of responses</i>		12

Please explain your choice above:

Response

Separate applications help the user to better justify the access to different facilities in the context of the proposed research project

Not sure If I understand the question.

Better to apply for two services useful for the project in one single application

I think this would give more opportunities to develop different projects

I found great to have all those institutions in one place. But, from the point of view of a non-expert on the topics in the website, it was difficult to figure out what was every group exactly doing. I believe the site would benefit from a more plain language.

Its good to have everything in one place and indeed information about the RIs is helpful and educative explaining what one can apply for.

The coherence of the project has to be better worked out.

I am not sure I understand well the question. If it refers to a single application for the use of multiple RI, I think it is fine. No waste of time to prepare several applications for one purpose.

Not applicable

Number of responses 9

Did you have prior knowledge of European research infrastructures?

	<i>Option</i>	<i>Count</i>
	Yes	5
	No	7
<i>Number of responses</i>		12

**If yes, did your prior knowledge make any difference in your choice of service/technology?
(multiple selections possible)**

<i>Option</i>	<i>Count</i>
<i>Yes, knowing RIs helped me to select the appropriate service providers.</i>	4
<i>Yes, knowing RIs helped me to trust in the quality of their service.</i>	1
<i>Yes, knowing RIs helped me to identify the most suitable technologies and services.</i>	1
<i>Yes, knowing RIs motivated me to request services from additional RIs for my CORBEL project.</i>	1
<i>Not applicable.</i>	2
<i>Number of responses</i>	8

In the Open Call the available services were grouped into five different Access Tracks. Did this grouping into Access Tracks help you focus your scientific target or did it narrow your options?

<i>Option</i>	<i>Count</i>
<i>The grouping of services helped to define my scientific target.</i>	6
<i>The grouping of services narrowed my options.</i>	4
<i>The grouping of services was of no particular relevance to me.</i>	1
<i>Number of responses</i>	11

The Open call offered both physical visits as well as remote access to RIs. How relevant are physical visits for you?

<i>Option</i>	<i>Count</i>
<i>highly relevant</i>	9
<i>moderately relevant</i>	0
<i>average</i>	3
<i>less relevant</i>	0
<i>not relevant at all</i>	0
<i>Number of responses</i>	12

The Open call offered two types of access: physical visits as well as remote access to RIs. How relevant are remote services for you?

<i>Option</i>	<i>Count</i>
<i>highly relevant</i>	5
<i>moderately relevant</i>	3
<i>average</i>	0
<i>less relevant</i>	3
<i>not relevant at all</i>	1
<i>Number of responses</i>	12

What do you think of the time it took to review your proposal?

	<i>Option</i>	<i>Count</i>
	1: very poor	0
	2: poor	1
	3: average	1
	4: good	7
	5: very good	3
<i>Number of responses</i>		12

How do you rate the proposal review process?

	<i>Option</i>	<i>Count</i>
	1: very poor	0
	2: poor	0
	3: average	2
	4: good	6
	5: very good	2
<i>Number of responses</i>		10

How do you rate the quality of the feedback you received?

	<i>Option</i>	<i>Count</i>
	1: very poor	0
	2: poor	1
	3: average	0
	4: good	8
	5: very good	2
<i>Number of responses</i>		11

**How do you rate the application management system ARIA with respect to the following point:
user friendliness?**

	<i>Option</i>	<i>Count</i>
	1: very poor	0
	2: poor	1
	3: average	0
	4: good	8
	5: very good	2
<i>Number of responses</i>		11

**How do you rate the application management system ARIA with respect to the following point:
structure of the application process?**

	<i>Option</i>	<i>Count</i>
	1: very poor	0

<i>2: poor</i>	0
<i>3: average</i>	3
<i>4: good</i>	5
<i>5: very good</i>	3

Number of responses 11

**How do you rate the application management system ARIA with respect to the following point:
online support (if used)?**

<i>Option</i>	<i>Count</i>
<i>1: very poor</i>	0
<i>2: poor</i>	1
<i>3: average</i>	1
<i>4: good</i>	2
<i>5: very good</i>	2
<i>not applicable</i>	5

Number of responses 10

**How do you rate the application management system ARIA with respect to the following point:
messaging system?**

<i>Option</i>	<i>Count</i>
<i>1: very poor</i>	1
<i>2: poor</i>	1
<i>3: average</i>	3
<i>4: good</i>	1
<i>5: very good</i>	1
<i>not applicable</i>	3

Number of responses 10

**How do you rate the application management system ARIA with respect to the following point:
scheduling function?**

<i>Option</i>	<i>Count</i>
<i>1: very poor</i>	0
<i>2: poor</i>	2
<i>3: average</i>	2
<i>4: good</i>	1
<i>5: very good</i>	1
<i>not applicable</i>	4

Number of responses 10

Have you noticed any missing features? How could we improve ARIA?

Response

Improve the system with messages to the applicant to notify the outcome of each step of the review process (i.e. when the project has been approved or when the technical evaluation is completed)

Prominent link to ARIA start side in the menu bar on the left hand side. Frequent email reminders until a message is marked as read online are inconvenient.

No

I found the system was great.

I think is more functional to directly contact by email the RI than using the ARIA's messaging system.

Difficult login.

Maybe, I did something wrong, but during the submission, I was not able to attach some files.

Updated information on service providers

Number of responses 8

Second Open Call Service

The most important information about all involved RIs and service providers was presented on the Open call webpages. Did this increase your knowledge about the service offers of others partners?

	<i>Option</i>	<i>Count</i>
	<i>No, I was already quite familiar with the service offers of other RIs</i>	2
	<i>Yes, I discovered services I was not aware of</i>	1
		<i>Number of responses</i> 3

Applicants had to contact you prior to their application, did you appreciate these discussions about prospective projects?

	<i>Option</i>	<i>Count</i>
	<i>Yes, we value the opportunity to discuss project ideas already at an early stage.</i>	3
	<i>No, discussions about prospective projects have no benefit for us.</i>	0
		<i>Number of responses</i> 3

Applicants had to contact you prior to their application, do you think it improved the quality of the applications?

	<i>Option</i>	<i>Count</i>
	<i>Yes</i>	3
	<i>No</i>	0
		<i>Number of responses</i> 3

What do you think of the usefulness of a first central point of contact with respect to the following point: to guide the applicants in finding the appropriate RIs/service providers to support their projects?

<i>Option</i>	<i>Count</i>
1: very poor	0
2: poor	0
3: average	0
4: good	3
5: very good	0
<i>Number of responses</i>	
	3

What do you think of the usefulness of a first central point of contact with respect to the following point: to support the interconnection between the different RIs/service providers involved?

<i>Option</i>	<i>Count</i>
1: very poor	0
2: poor	0
3: average	0
4: good	2
5: very good	1
0: not applicable	0
<i>Number of responses</i>	
	3

Would you recommend to maintain such a central contact for the sustainable provision of shared services across RIs?

<i>Option</i>	<i>Count</i>
Yes	3
No	0
<i>Number of responses</i>	
	3

With respect to the following point, were some of the proposals you received unexpected: individual service(s) requested from your RI?

<i>Option</i>	<i>Count</i>
<i>No, the requested services were as usual.</i>	2
<i>Yes, some of the requested services were quite unusual.</i>	1
<i>Number of responses</i>	
	3

With respect to the following point, were some of the proposals you received unexpected: scientific rationale and field of projects requesting your support?

<i>Option</i>	<i>Count</i>
<i>No, scientific rationales and fields of projects were as usual.</i>	2

<i>Yes, some of the scientific rationales and fields of projects were quite unusual.</i>	1
<i>Number of responses</i>	3

With respect to the following point, were some of the proposals you received unexpected: chosen combination of RIs and services providers?

<i>Option</i>	<i>Count</i>
<i>No, the combinations were logical.</i>	1
<i>Yes, the combinations were quite surprising.</i>	0
<i>Number of responses</i>	3

Please comment :

Response

From a general viewpoint, as the Open Call was designed to support basic research projects, it was complicated to identify a way to support applied research and adapt our services to the design of the call

I only received one proposal, and that one was appropriate.

Number of responses 2

The application we received matched the services we described in the Open Call.

<i>Option</i>	<i>Count</i>
<i>I fully agree to this statement.</i>	1
<i>I partly agree to this statement.</i>	2
<i>I am neutral.</i>	0
<i>I disagree with this statement.</i>	0
<i>I strongly disagree with this statement.</i>	0
<i>Number of responses</i>	3

Do you have suggestions to improve the alignment of service offers and user demands in the future?

Number of responses 0

How do you rate the proposal review process with respect to the step 'scientific review'?

<i>Option</i>	<i>Count</i>
<i>1: very poor</i>	0
<i>2: poor</i>	1
<i>3: average</i>	1
<i>4: good</i>	1
<i>5: very good</i>	0
<i>Number of responses</i>	3

How do you rate the proposal review process with respect to the step 'technical review'?

	Option	Count
	1: very poor	0
	2: poor	1
	3: average	0
	4: good	2
	5: very good	0
<i>Number of responses</i>		3

If you have suggestions for improvement of the review process, please share them with us!

Response

I wonder how useful the technical review since already discussed at previous stage when PI contact the RI before application

1. the scientific review could be done through the scientific evaluation mechanisms of the RIs involved 2. since the applicants must contact the service providers prior to submit their proposal, the technical review is useless, at least as designed for this call

I don't think I saw any evaluation report resulting from the scientific review. Perhaps I overlooked it. So I cannot judge really whether the scientific review process went well or not.

Number of responses 3

How do you rate the application management system ARIA with respect to the following point: user friendliness?

	Option	Count
	1: very poor	0
	2: poor	0
	3: average	1
	4: good	2
	5: very good	0
<i>Number of responses</i>		3

How do you rate the application management system ARIA with respect to the following point: structure of the application process?

	Option	Count
	1: very poor	0
	2: poor	0
	3: average	0
	4: good	3
	5: very good	0
<i>Number of responses</i>		3

How do you rate the application management system ARIA with respect to the following point:
online support (if used)?

<i>Option</i>	<i>Count</i>
1: very poor	0
2: poor	0
3: average	0
4: good	1
5: very good	1
0: not applicable	1
<i>Number of responses</i>	3

How do you rate the application management system ARIA with respect to the following point:
messaging system?

<i>Option</i>	<i>Count</i>
1: very poor	0
2: poor	0
3: average	0
4: good	1
5: very good	0
0: not applicable	2
<i>Number of responses</i>	3

How do you rate the application management system ARIA with respect to the following point:
scheduling function?

<i>Option</i>	<i>Count</i>
1: very poor	0
2: poor	0
3: average	0
4: good	0
5: very good	0
0: not applicable	3
<i>Number of responses</i>	3

Have you noticed any missing features? How could we improve ARIA?

Response

From the management viewpoint (not the applicant) the system could be more intuitive

Number of responses 1

First Open Call User

Please select all the service providers you have been granted access to

	Option	Count
	<i>Biobank of the Biomedical Research Foundation of the Academy of Athens (BRFAA)</i>	3
	<i>Chemogenomics Group, EMBL-EBI</i>	2
	<i>Non-vertebrate Genomics, EMBL-EBI</i>	0
	<i>Protein Data Bank in Europe, EMBL-EBI</i>	0
	<i>BioStudies database, EMBL-EBI</i>	1
	<i>Centre National de Recherche Scientifique</i>	1
	<i>Stazione Zoologica Anton Dohrn</i>	1
	<i>Scottish Oceans Institute, University of St. Andrews</i>	0
	<i>Chemical Screening Unit & Medicinal Chemistry Group, Leibniz-Institute FMP</i>	6
	<i>Advanced Light Microscopy Facility, EMBL</i>	8
	<i>Cell Microscopy Core, University Medical Centre Utrecht</i>	2
	<i>Marine Facility, EMBL</i>	3
	<i>Sharpe Lab, Centre for Genomic Regulation</i>	0
	<i>Super Resolution Node Barcelona</i>	3
	<i>German Mouse Clinics, Helmholtz Centre Munich</i>	2
	<i>Centro di Risonanze Magnetiche, CIRMMF</i>	1
	<i>Instruct Image Processing Center</i>	2
	<i>Bioinformatics platform, Berlin Institute for Medical Systems Biology, MDC</i>	1
	<i>Division of Theoretical Systems Biology, DKFZ</i>	0
	<i>Molecular Cell Physiology, Vrije University Amsterdam</i>	3
	<i>Other</i>	4
	<i>Number of responses</i>	20
	<i>Option</i>	<i>Count</i>

How did you hear about the CORBEL Open Call?

	Option	Count
	<i>Research Infrastructure website</i>	8
	<i>Announcement in journal</i>	0
	<i>Announcement at conference</i>	1
	<i>Direct mailing from infrastructure</i>	4
	<i>Direct mailing from other sources</i>	2
	<i>Social Media (LinkedIn, Research Gate, Twitter)</i>	0
	<i>Personal contact</i>	8
	<i>Other</i>	2
	<i>Number of responses</i>	20

How do you rate the information provided on the CORBEL Open call webpages with respect to the following point: instructions given

<i>Option</i>	<i>Count</i>
1: very poor	0
2: poor	0
3: average	1
4: good	14
5: very good	5
<i>Number of responses</i>	
	20

How do you rate the information provided on the CORBEL Open call webpages with respect to the following point: ease of use

<i>Option</i>	<i>Count</i>
1: very poor	0
2: poor	1
3: average	3
4: good	8
5: very good	8
<i>Number of responses</i>	
	20

How do you rate the information provided on the CORBEL Open call webpages with respect to the following point: level of detail

<i>Option</i>	<i>Count</i>
1: very poor	0
2: poor	0
3: average	4
4: good	11
5: very good	5
<i>Number of responses</i>	
	20

Please comment in general on the content of the CORBEL Open Call webpages. Let us know how we can improve!

Response

Very clear really - would not add much. I could find what I needed in not so many words.

For me it is perfect. Thanks

Description of the research infrastructure and contact persons

To improve the webpages, you can highlight that the applicant must contact the service provider before the submission

More detail and introduction would be helpful

All fine

It was not Always clear how to navigate to the different infrastructures.

It was excellent!

It was sufficient to achieve a comprehensive application. Navigating through the web side providers is not very easy.

The information provided is good. But I miss a clear statement about the maximum or the expected duration of the projects, or for how long the users are allowed to use the infrastructures. This is an important point to consider in the scheduling. Sometimes the projects are complex and finding the optimal conditions and setting up the protocols take a while.

Not applicable

All needed information is there. The only thing I would improve is the information about the possibility of requesting funding for materials and reagents.

Honestly, it's been too long since the application - if I had received this survey right after applying, I would have had more ideas!

The CORBEL web page looks quite fine to me.

According to my experience, in general both the applicant and the service providers do not know which is covered by the grant

The content of Corbel Open Call webpages is well organized and easy to use.

The information provided by the CORBEL Open Call webpages was very useful.

Matching of two service providers was very difficult for us.

The amount of information on the homepage is quite large and confusing for the first-time user. The graphic has rather little contrast and is hard to see. Many links from the homepage are incomplete, general or under construction. For example, the information content of Access, Data, ELSI is rather low. An exception is Innovation in which you can even find templates for NDA and MTA (without, however, to be expected here). For the goal-oriented user, who is specifically looking for a laboratory providing a specific technique for a particular scientific question, the multitude of sub-links is initially confusing and it takes some time to orientate oneself. The best and fastest way to get there is to choose the 1st open call and click on Technologies and Services. Since finding labs with expertise in a special field is one of the main interest of users it should be prominently placed and the provided services should be described in detail (as done by ALMF, the CMC and SLN@BCN).

Number of responses 19

Did you contact the project managers ahead of the application submission and if so, was this helpful for you?

	<i>Option</i>	<i>Count</i>
	<i>Yes I did, it was very useful</i>	8
	<i>Yes I did, it was useful</i>	6
	<i>Yes I did, there was no benefit</i>	1
	<i>No, I did not</i>	5

Number of responses 20

Please comment your choice

Response

I contacted the project manager for questions about the Corbel travel grant and I received all required information and support.

Yes it was helpful to contact the project manager and to know more clearly about the infrastructures available.

I contacted more times the manager to ask information and to have their support and I always received an answer in brief time and with a solution to my question. I didn't contact the service provider before acceptance but I met by skype the service provider when the proposal has been accepted. I think that this point is essential for the quality of application

Personal contact was very helpful to streamline the application

Both managers were very accessible and helpful in the application procedure

I needed some clarity and the managers were timely and helpful

No time I realized the call too late

I admit that I did not contact the project managers ahead. But later, I realized that it would have been very convenient to contact them to check the feasibility of the application and to discuss some aspects of the project. One of the reviewers raised some doubts in the review process, which led to some concerns for the project managers. These concerns were solved fairly quick. If I contacted the managers to discuss about the application before the submission, I think everything should have been much clearer from the very beginning. Fortunately, the project was accepted and is progressing well. I will take all this in mind for future applications.

Not applicable

The contact person redirected the question and the answers I got were not very specific and useful. However this was only with one of the service providers. The other was very specific and initiated contact to know about the project.

The project manager was amazingly helpful.

It is very important to talk with the infrastructure providers beforehand since otherwise it is difficult to write a feasible project. I think this is crucial.

It was useful discuss with the project managers in order to define a detailed program of experiments and visits.

I did not contact the project managers ahead of the application submission due to time constraints (deadline was very close). However, during the application procedure some technical issues arose and I contacted them through the website. I am very grateful to their prompt reply and professionalism so the issues were solved in due time. Thank you again to all of you!

WE asked about eligibility criteria and nature of funding which was not clear to us.

Since we received information about the Corbel Call rather late, there was not much time left for a direct contact before the deadline. Therefore, the selection was made exclusively through the methods and technologies offered

Number of responses 16

You had to get in contact with your preferred service providers ahead of your application submission. Do you think it affected the quality of your application?

	<i>Option</i>	<i>Count</i>
	<i>Yes, I did and it really helped.</i>	6
	<i>Yes, I did and it helped.</i>	8
	<i>No, I did not.</i>	6
<i>Number of responses</i>		20

How long did it take you to find all information you needed to prepare your application?

	<i>Option</i>	<i>Count</i>
	<i><1 hour</i>	1

2 - 4 hours	10
4 - 6 hours	3
6 - 8 hours	3
>8 hours	3

Number of responses 20

What were your reasons for applying to CORBEL? Selection of multiple answers is allowed.

Option	Count
<i>technical competence/expertise not available in your home institution</i>	16
<i>financial support to conduct your project</i>	7
<i>access to instruments/technologies</i>	16
<i>access to samples/materials not available in your institution/country</i>	4
<i>ensuring high quality standards for your data/results</i>	4
<i>finding new industry and academic collaborations</i>	2
<i>independent evaluation of your project</i>	4
<i>Other</i>	0
Number of responses	20

The Open Call gave you the opportunity to apply to multiple RIs at once. How useful do you rate finding the key information about all RIs in one place?

Option	Count
<i>1: very poor</i>	0
<i>2: poor</i>	0
<i>3: average</i>	4
<i>4: good</i>	11
<i>5: very good</i>	5
Number of responses	20

Do you prefer a single application over multiple separate applications?

Option	Count
<i>Yes</i>	12
<i>No</i>	8
Number of responses	20

Please explain your choice above

Response

A single application enforces some forward thinking and integration. That mitigates risks sometime connected to limited competence in one area.

In my opinion it is useful to have one single application with the opportunity to choose for multiple RIs. I only suggest that this should be an opportunity and not mandatory.

Yes, this is useful to have only one application for using several and complementray core facilities.

Less work

With separate applications one could do sequential steps, the requirement to apply to multiple seems somewhat artificial.

Easier to keep track of

I personally think that it is reasonable to apply to multiple infrastructures to achieve the goal of the project

It is expected that the project is planned and scheduled from the beginning, at least roughly, including the infrastructures that might be needed. Thus, it seems to make sense to apply for multiple RIs at once. However, having said that, it often happens that during the development of a project, new specific needs arise that may require access to a infrastructure. So, I feel it would be useful that the Corbel applications be flexible, allowing the users to apply for RIs by multiple or single applications. In addition, some technologies offered by Corbel might not be available through other European infrastructures (to our knowledge, FIB-SEM microscopy is not offered, at least clearly). Therefore, Corbel may give an excellent opportunity to access those infrastructures by application to a single RI. This option is not available at the moment in Corbel, to my knowledge.

Not applicable

It enables a global view of the project and makes the process faster and simpler.

A single application streamlines the process, but also required me to think more deeply about how all parts plugged together.

It would be more reasonable to prepare and get a good evaluation of your project with all parts and steps included rather than applying for different grants with parts of the same project scattered

I would allow researchers to choose between a single application over multiple, because it may depend by the research project.

A single application facilitates coordination and better overview on the overall proposal.

A central contact point independent of the host laboratory has advantages and disadvantages. We think a central project management is necessary to take care of all formal technical and organisational issues. At the same time, however, this also means bureaucratic expenditure of time, which is lost for the scientific-creative work. In a bilateral scientific cooperation, the partners have a common interest in solving a problem and communicate directly without bureaucratic friction losses.

Number of responses 15

**If yes, did your prior knowledge make any difference in your choice of service/technology?
(multiple selections possible)**

	<i>Option</i>	<i>Count</i>
<i>Yes, knowing RIs helped me to select the appropriate service providers.</i>		4
<i>Yes, knowing RIs helped me to trust in the quality of their service.</i>		1
<i>Yes, knowing RIs helped me to identify the most suitable technologies and services.</i>		3
<i>Yes, knowing RIs motivated me to request services from additional RIs for my CORBEL project.</i>		3
<i>Not applicable.</i>		10

Number of responses 20

In the Open Call the available services were grouped into five different Access Tracks. Did this grouping into Access Tracks help you focus your scientific target or did it narrow your options?

<i>Option</i>	<i>Count</i>
<i>The grouping of services helped to define my scientific target.</i>	8
<i>The grouping of services narrowed my options.</i>	6
<i>The grouping of services was of no particular relevance to me.</i>	6
<i>Number of responses</i>	20

The Open call offered both physical visits as well as remote access to RIs. How relevant are physical visits for you?

<i>Option</i>	<i>Count</i>
<i>highly relevant</i>	12
<i>moderately relevant</i>	6
<i>average</i>	0
<i>less relevant</i>	2
<i>not relevant at all</i>	0
<i>Number of responses</i>	20

The Open call offered two types of access: physical visits as well as remote access to RIs. How relevant are remote services for you?

<i>Option</i>	<i>Count</i>
<i>highly relevant</i>	10
<i>moderately relevant</i>	6
<i>average</i>	1
<i>less relevant</i>	3
<i>not relevant at all</i>	0
<i>Number of responses</i>	20

What do you think of the time it took to review your proposal?

<i>Option</i>	<i>Count</i>
<i>1: very poor</i>	0
<i>2: poor</i>	0
<i>3: average</i>	1
<i>4: good</i>	8
<i>5: very good</i>	11
<i>Number of responses</i>	20

How do you rate the proposal review process?

<i>Option</i>	<i>Count</i>
<i>1: very poor</i>	0

2: poor	0
3: average	2
4: good	10
5: very good	8

Number of responses 20

How do you rate the quality of the feedback you received?

Option	Count
1: very poor	0
2: poor	0
3: average	3
4: good	11
5: very good	6

Number of responses 20

How do you rate the application management system ARIA with respect to the following point: user friendliness?

Option	Count
1: very poor	0
2: poor	0
3: average	6
4: good	9
5: very good	5

Number of responses 20

How do you rate the application management system ARIA with respect to the following point: structure of the application process?

Option	Count
1: very poor	0
2: poor	0
3: average	2
4: good	14
5: very good	4

Number of responses 20

How do you rate the application management system ARIA with respect to the following point: online support (if used)?

Option	Count
1: very poor	0
2: poor	1

3: average	1
4: good	4
5: very good	3
not applicable	11

Number of responses 20

How do you rate the application management system ARIA with respect to the following point: messaging system?

Option	Count
1: very poor	0
2: poor	4
3: average	1
4: good	8
5: very good	4
not applicable	3

Number of responses 20

How do you rate the application management system ARIA with respect to the following point: scheduling function?

Option	Count
1: very poor	0
2: poor	2
3: average	5
4: good	7
5: very good	2
not applicable	4

Number of responses 20

Have you noticed any missing features? How could we improve ARIA?

Response

As I am related to the ARIA development team I am not a good person to rate my ARIA answers; I admit bias.

No thanks, it is fine like it is

No

All fine

A note to Corbel, rather than ARIA. It would be nice to get a cost estimate for institute administration, but I see the potential difficulty.

Nothing I noticed

No major missing points

Just a comment: ARIA provides good tools to communicate with RIs. But in our experience, personal email communication between the researchers and the expert at the RI who will carry out or assist us in the experiments seems to be most direct communicating mechanism.

Not applicable

Not really

(Not yet!)

Did not notice any particular missing feature

The access to the dashboard has been down for a very long time. I think this is not a good way of communicating with the infrastructures. Email is more efficient since you know that you've received a reply in real time. On the other hand it is hard to have records of the communication by email so I guess an online platform with messages with link to email would be perfect.

No

Nothing to add.

The whole experience was excellent. I am grateful to all of you I had the opportunity to interact to date. Thank you!

No

So far, everything worked fine.

Number of responses 18

First Open Call Service

The most important information about all involved RIs and service providers was presented on the Open call webpages. Did this increase your knowledge about the service offers of others partners?

	Option	Count
	<i>No, I was already quite familiar with the service offers of other RIs</i>	1
	<i>Yes, I discovered services I was not aware of</i>	12
	<i>Yes, I learned a lot about other RIs and service providers</i>	4
	<i>No, I could not find the information about the other RIs</i>	0
Number of responses		17

Were you directly contacted by potential users prior to their application?

	Option	Count
	<i>Yes, all applicants requesting our services contacted us prior to their application.</i>	1
	<i>Yes, more than 50% of the applicants requesting our services contacted us prior to their application.</i>	4
	<i>Yes, less than 50% of the applicants requesting our services contacted us prior to their application.</i>	4
	<i>No, none of the applicants requesting our services contacted us prior to their application.</i>	8
Number of responses		17

If applicants contacted you prior to their application, did you appreciate these discussions about prospective projects?

	Option	Count
	<i>Yes, we value the opportunity to discuss project ideas already at an early stage.</i>	9
	<i>No, discussions about prospective projects have no benefit for us.</i>	0

<i>Not applicable, as we were not contacted prior to the application.</i>	8
<i>Number of responses</i> 17	

If applicants contacted you prior to their application, do you think it improved the quality of the applications?

	<i>Option</i>	<i>Count</i>
	Yes	9
	No	0
<i>Not applicable, as we were not contacted prior to the application.</i>		8
<i>Number of responses</i>		17

What do you think of the usefulness of a first central point of contact with respect to the following point: to guide the applicants in finding the appropriate RIs/service providers to support their projects?

	<i>Option</i>	<i>Count</i>
	1: very poor	0
	2: poor	0
	3: average	0
	4: good	8
	5: very good	9
<i>Number of responses</i>		17

What do you think of the usefulness of a first central point of contact with respect to the following point: to support the interconnection between the different RIs/service providers involved?

	<i>Option</i>	<i>Count</i>
	1: very poor	0
	2: poor	1
	3: average	1
	4: good	6
	5: very good	8
	0: not applicable	1
<i>Number of responses</i>		17

Would you recommend to maintain such a central contact for the sustainable provision of shared services across RIs?

	<i>Option</i>	<i>Count</i>
	Yes	16
	No	1
<i>Number of responses</i>		17

With respect to the following point, were some of the proposals you received unexpected: individual service(s) requested from your RI?

	<i>Option</i>	<i>Count</i>
<i>No, the requested services were as usual.</i>		10
<i>Yes, some of the requested services were quite unusual.</i>		7
<i>Number of responses</i>		17

With respect to the following point, were some of the proposals you received unexpected: scientific rationale and field of projects requesting your support?

	<i>Option</i>	<i>Count</i>
<i>No, scientific rationales and fields of projects were as usual.</i>		13
<i>Yes, some of the scientific rationales and fields of projects were quite unusual.</i>		4
<i>Number of responses</i>		17

With respect to the following point, were some of the proposals you received unexpected: chosen combination of RIs and services providers?

	<i>Option</i>	<i>Count</i>
<i>No, the combinations were logical.</i>		15
<i>Yes, the combinations were quite surprising.</i>		2
<i>Number of responses</i>		17

Please comment:

Response

Would be great to set packages of services, a kind of pipeline (e.g. electron microscopy + modelling)

Some of the proposals were excellent, well-thought-through proposals which, while challenging, have a reasonable chance of success. Other proposals were poor and it was clear that applicants either didn't have any real insights into what we could offer or what the limitations were. Such proposals tended also to be poor all-round.

In reviewing one application for Transcriptome analysis for Autism Spectral disorder, I had initially thought this "unusual" in the sense, that I hadn't been aware such methodology could be effective. The proposal prompted me to do some reading before finding out that there actually was a precedent for such work. Thus, the review made me aware of a broader range of applicability for the relevant work than I had previously appreciated.

One of the users requested services that were outside the scope of our mesoscopic imaging facility. I'm not sure that they understood this when applying.

In general, maybe it would be good to have a mandatory TC during the technical review (not afterwards) to really define the status of the user projects and whether further adjustments should be made before applying.

Logical and good combination between RI needed by users.

My opinion is very limited because we only received 8as second choice) a single application

Within some applications there were redundant providers in terms of requested services.

One of our projects was submitted first to a different RI of the same access track. This indicates

that the user had not chosen the proper RI that would fit better their expectations. One of our projects was in a very immature stage. However, what they were specifically asking to us was OK, and with no reason to decline it. In one of our projects, we feel that our participation as RI can be made redundant by another RI.

Note: in the question <> the answer menu is not working. In general, some users not being familiar with the specific techniques may ask for details not pertinent to/obtainable with the chosen technique. They need to be assisted to redesign their original measurement scheme to achieve their scientific objectives through a more solid and realistic experimental approach. On the other end, some proposals showed a scientific thinking different from the majority of our "typical" users.

PID2381 VID3537 we don't give support in this kind of image processing

Sometimes it seemed that a second infrastructure was only selected to qualify for a corbel project.

Requests for help with data management were expected

Proposals not fitting the service offered

Number of responses 14

The application we received matched the services we described in the Open Call.

	<i>Option</i>	<i>Count</i>
	<i>I fully agree to this statement.</i>	7
	<i>I partly agree to this statement.</i>	5
	<i>I am neutral.</i>	3
	<i>I disagree with this statement.</i>	2
	<i>I strongly disagree with this statement.</i>	0

Number of responses 17

Do you have suggestions to improve the alignment of service offers and user demands in the future?

Response

It is fine

Until the proposals were received it was not at all clear what level of resource would be required to support these projects. Clearly there is always the possibility of some variation but it will be interesting to see how things change in the next open call. Some applicants were unrealistic in their expectations of what we can provide. It took quite a lot of work in some cases to provide sufficient "evidence" of this incompatibility and quite a lot of email traffic (a) to understand what the applicant really wanted to do (because the proposal was not well-written) and (b) to explain the scope and limitations of what our resource is able to provide. There was the impression that we had to almost try and do the work in order to demonstrate the futility of such proposals, when it would have been much easier to give a straightforward response. It may also be useful if groups of service providers combined to provide the assessment. Whilst one part of a proposal might be feasible, if other parts are less so then this would render the project invalid.

I believe "alignment of services" might be facilitated by a more clear delineation of anticipated time-line of services between groups involved. For example, I'm ready at any point to do the analysis our group offered, but it remains unclear when I will receive such data.

No.

Provide more example project descriptions on the website.

RI brand is important but more than logo, expertise is the most important for users. So better to highlight on the webpage the expertise than the RI name/acronyms.

No suggestions at this stage

No

The applicants can be urged to contact the service providers before application. This will not only decrease the redundancy of requested services, but also help to avoid very immature projects which definitely needs a pilot study beforehand.

A more active participation of the RIs after the moment of submission would help in improving such alignment (see our answer to the first question)

As already suggested, a section collecting various example could be of help for the user

Maybe more contact directly with the services

None

The user had sometimes unrealistic expectations regarding the capabilities of a method. They should be encouraged to contact us more.

No

Number of responses 15

How do you rate the proposal review process with respect to the step 'scientific review'?

<i>Option</i>	<i>Count</i>
<i>1: very poor</i>	0
<i>2: poor</i>	1
<i>3: average</i>	3
<i>4: good</i>	9
<i>5: very good</i>	4

Number of responses 17

How do you rate the proposal review process with respect to the step 'technical review'?

<i>Option</i>	<i>Count</i>
<i>1: very poor</i>	0
<i>2: poor</i>	0
<i>3: average</i>	3
<i>4: good</i>	9
<i>5: very good</i>	5

Number of responses 17

If you have suggestions for improvement of the review process, please share them with us!

Response

First, the ARIA system is not particularly intuitive and we found it difficult simply to know whether or not we had properly completed the necessary steps in reviewing a proposal. The process involves each resource commenting on their individual capabilities without seemingly a higher-level assessment of the scientific quality of the proposal being done first. This might be a better approach. In fact, it would be much better to combine the scientific and the

technical reviews together - we for sure have a lot of scientific expertise which would be helpful to apply along with the technical viability.

During the step of the technical review, there should be a possibility to rate the feasibility of the project in terms of a) general feasibility and b) whether the facility would actually be able to do it in time or has the capacities for. If the project is generally feasible, but the facilities have no capacities at that moment, the user could do the project later on.

Nothing to say

Reviewers can be informed about the services offered by providers.

See our answer to question 1.

Despite most of the users contacted us prior the submission, not all of them has done it. We suggest that all the applicants are requested to have preliminary contacts with all service providers. Alternatively, the RI staff could perform an analysis of only the technical requirements associated with the requested services prior to the scientific review. This could improve the quality of the proposals.

to know better the support of each service

The prior request discussed with us did not result in an application in the end (mainly because the scope for the second infrastructure could not be well defined)

It was difficult for us to review a large number of projects at the same time and having to wait in some projects for a long time on the scientific review. An evaluation process without application deadline would be appreciated.

Number of responses 9

How do you rate the application management system ARIA with respect to the following point: user friendliness?

<i>Option</i>	<i>Count</i>
<i>1: very poor</i>	1
<i>2: poor</i>	2
<i>3: average</i>	6
<i>4: good</i>	7
<i>5: very good</i>	1
<i>Number of responses</i> 17	

How do you rate the application management system ARIA with respect to the following point: structure of the application process?

<i>Option</i>	<i>Count</i>
<i>1: very poor</i>	1
<i>2: poor</i>	3
<i>3: average</i>	3
<i>4: good</i>	9
<i>5: very good</i>	1
<i>Number of responses</i> 17	

How do you rate the application management system ARIA with respect to the following point:
online support (if used)?

	<i>Option</i>	<i>Count</i>
	1: very poor	0
	2: poor	1
	3: average	2
	4: good	0
	5: very good	2
	0: not applicable	12
<i>Number of responses</i>		17

How do you rate the application management system ARIA with respect to the following point:
messaging system?

	<i>Option</i>	<i>Count</i>
	1: very poor	0
	2: poor	3
	3: average	2
	4: good	3
	5: very good	1
	0: not applicable	6
<i>Number of responses</i>		17

How do you rate the application management system ARIA with respect to the following point:
scheduling function?

	<i>Option</i>	<i>Count</i>
	1: very poor	0
	2: poor	1
	3: average	4
	4: good	1
	5: very good	0
	0: not applicable	10
<i>Number of responses</i>		17

Have you noticed any missing features? How could we improve ARIA?

Response

It is fine

Unfortunately ARIA is not intuitive, is difficult or impossible to navigate, does not contain all the necessary information that is required (indeed, some information "disappears" after certain steps in the process have been completed) and has no (obvious) tracking capability. It would be great to be able to see all projects, their proposals, progress, timescales etc. But I can only find a list of project IDs and countries of origin. I'm afraid that doesn't help me to do anything...

Generally, I believe my other comments suffice for this, and I'm happy with the service. Perhaps for surveys such as this I would recommend a "save" option, so that if a connection is lost at the point of submission, the whole survey doesn't need to be filled in again from scratch.

No, not really.

User friendliness: Honestly, I never got an introduction on how to use the system and intuitively, it's very hard to find the proposals/reviews in version 2.0 (intuitively easier in 1.0). That's also why we preferred to handle everything related to the project by email... For the messaging system: there should be a possibility to forward messages to the individual service provider email addresses (at least to one person in the specific RI). At the moment, one is not notified if there are new messages.

Maybe some alerts on our pro e-mail box if there are some modifications on ARIA files related to our users (answer from the RI, comment from the users..) because we don't go checking often.

I did not notice missing features

The login is not always working properly

Most of the communication with our users and with other RIs has been performed outside ARIA (by conventional e-mail and Skype

The ARIA 1 management system, was quite simple even though with space for improvement. We would await to have ARIA 2 fully functional to evaluate what is needed to be implemented

Trying to do more easily to use

None

We feel ARIA is currently complicated, slow and not very intuitive. We got various feedback from applicants complaining it is not user friendly. Also this survey in aria was complicated, missed some answer-options and had too few free text fields for suggestions to improve. Next it crashed after all answers had been entered.

I left this same questionnaire in the evening and came back to it the following morning. I think my session had ended, but the application let me continue with filling in the survey and even produced some validation errors, while apparently "Submit Response" did not save my answers.

Number of responses 14