

LOFAR ERIC

Access Policy to Scientific User Services

This version of the User Access policy was endorsed by the Interim LOFAR ERIC Council on 16 December 2021.

1. Motivation; background

The statutory principal task of LOFAR ERIC is: “to assure coordinated exploitation of the LOFAR infrastructure, to produce world-class scientific research and to pursue further development, with the aim to maximise productivity and impact for the Members and the international scientific community, positioning LOFAR ERIC as a world-leading research infrastructure with a long-term perspective”.

The Access Policy contributes to the success of the principal task by regulating user access to the suite of scientific research services provided by LOFAR ERIC, given that the infrastructure operated by LOFAR ERIC has a finite capacity (for observing, data analysis, etc.), and that the LOFAR ERIC operations budget to carry out activities is finite also.

The Access Policy is aimed at maximal and timely scientific impact and breadth, for the Members and the international community, as mandated in the long-term vision above. This requires a balance that considers:

- Adherence to Open Science / Open Data principles, in view of:
 - Status as ERIC
 - Stature as world-leading research infrastructure
 - The LOFAR infrastructure exemplifying data-intensive research
- Assurance of appropriate Return-on-Investment, in order to:
 - Recognise & provide incentives for various partner contributions to LOFAR ERIC
 - Give due regard for priorities of/in the Member communities

Services for scientific research to which LOFAR ERIC offers access are highly diverse. Categories include for example:

- Online
 - Observing time (on distributed infrastructure: scheduled primary/commensal, triggered, sub-arrays, etc.)
 - Real-time data transport and processing
 - Performance monitoring
- Offline
 - Advanced data processing: standard pipelines
 - Data storage & retrieval capacity: Long Term Archive
 - Data delivery: standard products (public access; potential reservation period)
 - Compute capacity: user-designed post-processing, analysis
 - Support, advice by expert staff
 - Training, workshops, etc.

Open Science / Open data principles fit very well with many services of LOFAR ERIC, being a data-centric infrastructure.

2. General principles and rules

Access to LOFAR ERIC services is measured/quantified by the amount of operations budget spent to deliver particular services or service packages. This provides an objective parameter to steer on maximal impact from available budget, and allows uniform policies to cover a diverse and variable suite of services.

The majority of the access, as measured by operations budget available, is spent on Open Science. The specific suite of LOFAR ERIC science research services offered to the user community may be adjusted over time in accordance with the long-term vision, in order to optimally serve the balanced needs of the full science user community as well as the Members and other contributing LOFAR ERIC partners.

There are three main categories for access to LOFAR ERIC services:

- The LOFAR ERIC Science Portfolio
 - Mostly cyclic proposal-based access to observing and/or data processing services
- General Scientific User Services
 - e.g., open access to the science data archive, training activities, etc.
- Dedicated Access, connected to partner contributions, e.g.:
 - Part-time private use of each specific LOFAR station by its owner
 - Observing time to reward functionality or equipment development

The LOFAR ERIC Council safeguards that the suite of services to which access is offered is appropriately balanced in accordance with the guiding principles above, and the furtherance of its long-term vision.

The LOFAR ERIC Science Portfolio has the following categories:

- Large Programmes – established by the Council after peer review
 - Typically requiring observing and data processing extending over more than a year
- Short Programmes – peer-reviewed, predominantly Open Access
 - Typically executed within one-semester cycle
- Director's Discretionary Allocations – Open Access
 - Typically urgent, or not fitting into regular criteria

Member benefits are realised through:

- Large Programmes: Led by LOFAR ERIC partner research communities (encouraged to engage with the wider community)
- Short Programmes: Some reserved access
- Director's Discretionary Allocations: Full access
- General User Services: Full access
- Dedicated Access: standard benefit for part-time private use of a committed station

Detailed rules are given below.

Open Access is realised through:

- General User Services: Full access. This includes Open Access to the science data archive containing all data from the Large and Short Programmes (released after proprietary time)
- Short Programmes: The majority of access is through Open Science criteria
- Large Programmes: While initiated by LOFAR ERIC partner communities, these have the responsibility to contribute to strengthening the ERA
- Director's Discretionary Allocations: Fully Open Science

Detailed rules are given below.

A summary of the general user access principles for the LOFAR ERIC is provided in Table 1.

	Access			
	Members/partners	Full community	Independent Peer Review	Resource Allocation
Science Observing Portfolio				
Large Programmes	Member-led	Engaged to strengthen ERA	Yes	Decision by Council, following independent peer review
Short Programmes	Some reserved access	Majority of access	Yes	Decision by peer review committee
Director's Discr. All.	Open access	Open access	Expert advice	Rapid decision by Director, following expert advice
Open Data Archive* & General User Services	Open access	Open access	Open	<ul style="list-style-type: none"> ● Data retrieval: fully open ● Additional computing or support resources: handled as Short Programmes ● General Services: fully open
Dedicated Access	Standard benefits (e.g., part-time private use of only their own committed station)	-	-	-

* All LOFAR ERIC data resulting from executing the Science Portfolio will be publicly available in the Open Data Archive after a possible limited proprietary period, set as part of the peer-review process.

Table 1: Summary of the general user access principles for LOFAR ERIC.

3. Implementation

a) Characteristics of the LOFAR ERIC Science Portfolio

Large Programmes:

- Typically run over multiple years, served with hundreds to thousands of observing hours
- Typically served with significant shares of the available data processing capacity
- Must facilitate maximal science return through
 - Optimal use of LOFAR ERIC commensal observing/processing capacity
 - Potential for long-term broad community use of archived data products
- Must schedule staged data releases
 - May apply for a reasonable length of proprietary access for primary science goals
 - Periodic progress reports required to compete for continued access
- Coordinated by expert teams (details below)
 - Initiated and primarily carried out by LOFAR ERIC partner country science communities
 - Responsibility to strengthen community and ERA
- Established by the LOFAR ERIC Council (details below)
 - Process involves independent peer review

Short Programmes:

- Conducted within one semester cycle
- Typically served with less than a few hundred observing hours
- Any impactful science topic, e.g.:
 - Focused/targeted “quick wins”
 - Follow-up of Large Programme results
 - Rapid engagement in newly arising scientific questions
 - Joint observing with other telescopes
 - Testing for future Large Programmes
- No a priori requirements on team composition
 - Allows community broadening
- Uniform independent scientific peer review
 - Pre-defined access budgets (details below)
 - Predominantly for Open Science
 - Some access reserved to accommodate partner preferences

Director’s Discretionary Allocations:

- Impactful research not suitable for the standard review processes
 - Requiring urgent observing
 - Not fitting into regular access or Science Portfolio categories
- Fully allocated according to Open Science principles

b) Proposal allocation mechanisms

Proposals

Access into the LOFAR ERIC Science Portfolio always requires submission of a research proposal, explaining the science goals, technical feasibility, and the access sought.

- Short Programme proposals are invited for semester deadlines.
- Large Programme proposal calls are decided by the Council, typically every other year.
- Director’s Discretionary Allocation proposals can be submitted at any time.

Proposal calls summarise the services and amounts of access that are offered; extensive technical information and guidance are available through the LOFAR ERIC website, as well as prescriptions on the format and content of proposals.

The specific assessments of individual proposals, and the specific access decisions (allocations, or denials thereof) are not open to appeal by the proposing scientists, or their institutes, or the (Member or other) countries in which they work. Procedural issues may, in rare cases, lead to an appeal to the Director, and ultimately the Council, for a final, binding decision regarding the process followed.

The Programme Committee

The Programme Committee is a standing operational committee of scientific experts. It carries out independent, uniform peer review of the scientific and technical merits of all Short and Large Programme proposals, and settles (Short Programmes) or advises (Large Programmes) on the final access allocations, as detailed below. The Director oversees the procedural operation of the Programme Committee.

The Programme Committee conducts plenary deliberations with the mandate to reach independent conclusions regarding the allocation of proposals, such that the LOFAR ERIC Science Portfolio achieves maximal impact, considering scientific excellence and breadth of the community served, technical feasibility, and timeliness. The Programme Committee obtains advice from LOFAR ERIC support staff with respect to scheduling and other logistical and technical constraints on the allocation of the services requested. The Programme Committee functions in full confidentiality; only the final review and allocation decision is communicated to the proposers.

Short Programme proposal allocation process

The Programme Committee has the central role in uniformly peer-reviewing and settling on access allocations for all Short Programmes, following Open Science Principles. The individual and combined allocations must take into account technical, scheduling, and other logistical constraints, which are resolved with guidance by the LOFAR ERIC support staff during the Programme Committee meeting, with appropriate handling of the designations for reserved access rights of Members. The resultant allocations to Short Programme proposals are procedurally endorsed by the Director and reported to the Council.

Large Programme proposal allocation process

The success of individual Large Programmes is dependent on coordination by (large) expert teams, and is at the same time of major importance for the overall science impact of LOFAR ERIC and its value to the full community.

Therefore, the composition and periodic renewal of the Large Programme Portfolio starts with a self-organisation phase within boundaries set by the Council, incorporates an advice phase, proceeds through independent peer review, and is concluded through a decision by the Council.

The Council periodically issues a Call for Large Programme Proposals:

- Sets the indicative range of available services offered, e.g.:
 - Access to observing time, processing support, archive capacity, etc.
- Sets the requirements and evaluation criteria for Large Programme proposals, incl.:
 - Acceptable ranges / amounts of services requested
 - Efficient use of commensal observing/processing capacity

- Long-term breadth, community impact through public archive data releases
- Strengthening of collaboration between Member communities, ERA

Initial LOFAR2.0 Large Programme Portfolio allocation process:

The first process to prepare, review, and allocate proposals to fill the LOFAR2.0 Large Programme portfolio will follow the steps outlined below. Later proposal calls will follow a similar process, that will be set in detail by the Council at the appropriate time.

Large LOFAR2.0 observing programmes are expected to be coordinated by expert LOFAR users in Member countries but must benefit the broad community and satisfy various criteria to facilitate maximal science return. The ILT Board / ILEC / LOFAR ERIC Council may at any time decide that there is a reasonable prospect that an Observer will achieve Membership by the time the First Science phase of the Large Programme Portfolio begins. In that case, the community in the Observer country will henceforth be entitled to participate in the preparation and execution phases on-par with Member communities.

- Research teams from LOFAR ERIC partner communities submit Expressions of Interest
 - Focused on science goals
- Effective Large Programmes and collaborations are explored/developed
 - Deliberations coordinated and moderated by one or more expert scientists, appointed by the Director
 - Self-organisation workshop(s) may be arranged
 - Jointly discuss all expressions of interest
 - Explore synergies and mergers
 - Clarify top-level science goals and observing/technical strategies
 - Conclude on individual Large Programmes and their teams
 - Science themes & technical strategies
 - Team leaderships
 - Working groups
 - Strengthen collaborations between communities across Members and ERA
- Full Proposal writing by individual Large Programme Teams
 - For initial LOFAR2.0 Large Programmes:
 - Advice on techniques/strategies from LOFAR2.0 development team
 - Review by LOFAR2.0 Science Advisory Panel
 - Comments may be used to revise proposals
- Independent scientific review by the Programme Committee
 - Leading to advice to Council
 - Including advice on amounts allocated spanning 2 or 4 years
- Council establishes the Large Programme Portfolio considering:
 - Science productivity of LOFAR ERIC, long-term impact on the broad community (ERA)
 - Balance of LOFAR ERIC partner return-on-investment/interests

Director's Discretionary Allocation process

Proposals are reviewed at short notice by the Director, who will consult with support staff on scheduling constraints and technical issues, and may seek confidential advice of experts, in order to reach a final decision on allocation of access, rapidly if needed. The Council decides on the access quota available for this proposal type. The resultant allocations to Director's Discretionary Allocation proposals are reported to the Council.