LST Administration of Members and Authors

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Table of Contents

1   Introduction

The LST Administration of Members and Authors (LAMA) system is a tool developed using Django for the LST Collaboration. It serves as a platform for managing and tracking the roles and statuses of members and authors within the collaboration.

The purpose of LAMA is to enhance the efficiency and accuracy of managing collaboration memberships and authorship records.

This document offers a thorough overview of LAMA, detailing its core functionalities, system architecture, and operational guidelines.

The LAMA system provides:

- A database for managing members' and authors' information.

- Tools for tracking membership duration and authorship eligibility.

- View and edit members' details from the Member List view.

- Remove or update outdated memberships as needed.

- Automated processes to update authorship status based on predefined criteria.

It also includes a statistics module that offers:

- Visual dashboards with summary cards.

- Filtering options by country, group, and institute.

- Historical data trends using interactive histograms.

2 Login

The LST Administration of Members and Authors system utilizes LDAP authentication to manage user access securely. Users can log in to the system using their CTAO credentials.

Upon opening LAMA webpage, the user is welcomed by a general page visible in Fig. 2.1. Click on the button "Log In To Get Started!" to be redirected to the login page.
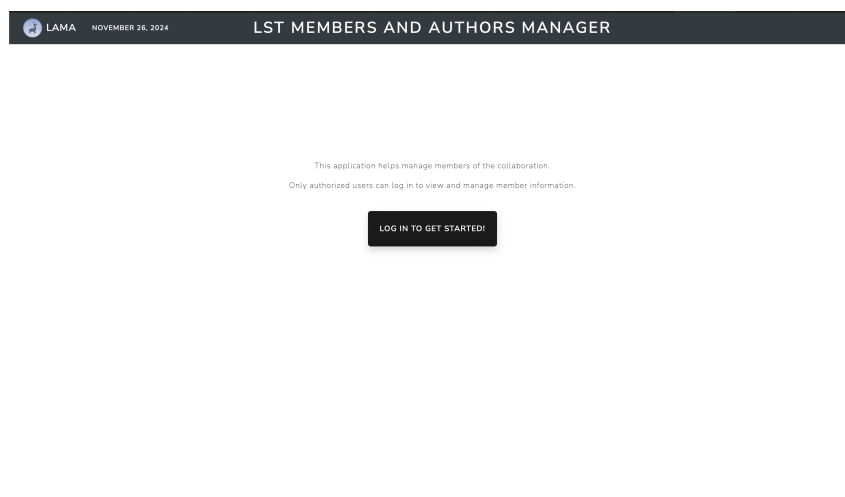

Figure 2.1 – Start view.

2.1 Login Process

To log in, users must follow these steps:

1. Navigate to the login page of the LAMA system (Fig. 2.2).

2. Enter your username in the format `name.surname`. This should match the CTAO credentials username.

3. Enter your CTAO credentials password in the provided password field.

4. Click on the "Login" button to authenticate.

Once successfully authenticated, users will be redirected to the home page.

2.2 LDAP Authentication

The system communicates with the CTAO LDAP server to verify user credentials. When a user attempts to log in, their username and password are sent to the LDAP server for validation. If the credentials are correct, the user is granted access to the LAMA system.

The authentication is handled through the following LDAP structure:

- Users must enter their `name.surname` as the username.

Figure 2.2 – Login page.

- The password field must match the user's CTAO credentials password.

- The LAMA system uses this information to authenticate against the organization's central LDAP server.

2.3   Permissions and Roles

Permissions are linked to specific LDAP groups, and LAMA assigns users permissions based on their group affiliation. Permissions control the level of access a user has within the system, such as viewing, editing, or managing members and authors. In LAMA, two roles are defined, with their corresponding permissions as follows:

- **Admin**: Full access to all features of the system, including managing users, members, authors, and statistics. Admin users can also assign or revoke permissions for other users.

- **Viewer**: Can view data and statistics, but does not have permission to make any changes to the system. Viewers have read-only access to the system's dashboards and statistics.

2.3.1   LDAP Group Mapping

Each role within the LAMA system is mapped to an LDAP group, which determines the permissions granted to the user. When a user logs in, the system checks their LDAP group membership and grants the corresponding permissions, assigning the user to the correct role.

- **lst-membership-admin**: Members of this group are granted `Admin` permissions.

- **lst-members**: Users in this group are granted `Viewer` permissions.

The system automatically checks the user's LDAP group upon login and assigns the corresponding permissions. If a user belongs to multiple groups, the highest level of permission is granted.

2.4   Password Management

Since LAMA relies on LDAP for authentication, password management is handled by the CTAO system. Users should follow the organization's guidelines for password resets and changes.

2.5   Security Considerations

To ensure the security of user data:

- The system does not store passwords; it only verifies them against the LDAP server.

- Sessions are automatically timed out after a 30-minute period of inactivity.

2.6   Logging Out

To log out of the system, users can click the "Logout" button in the top right corner of the page. Logging out will terminate the session and require re-authentication to access the system again.

3 Usage Guide

3.1 Navbar

Throughout the application, the navigation bar (Fig. 3.1) is displayed at the top of the interface, providing key tabs for navigating the site.
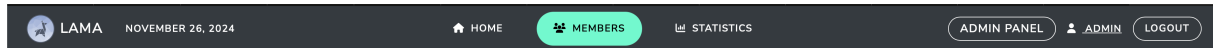

Figure 3.1 – Navigation bar of the app in case of Admin permission, with the added button "Admin Panel" compared to the standard permission level.

The navigation bar includes the following elements:

- **Admin Panel**: A button that brings the user to the Django admin site. This is only available to users with `Admin` permissions.

- **Username**: Displays the logged-in user's name for easy identification.

- **Logout**: Allows the user to log out of the application and end their session.

The navigation menu, located at the center of the navbar, includes the following tabs:

- **Home**: Returns the user to the main page (the Home Page).

- **Members**: Provides access to the Members List page, where users can view and manage member information.

- **Statistics**: Directs users to the Statistics page, which provides detailed visual dashboards and trends.

The currently active tab is highlighted for easy navigation. Clicking any of the other tabs will take the user to the corresponding page.

3.2 Home Page

Once a user has logged into LAMA, they will be directed to the **Home Page**, shown in Fig. 3.2. The Home Page serves as the central hub, providing users with a quick overview of the collaboration's status.

This page presents the following summary metrics, allowing users to quickly grasp key information about the collaboration:

- Total number of active members and authors.

- Number of countries, groups, and institutes involved in the project.

- Number of members who will become authors within the next 6 months.

- Number of members who are no longer members but still authors (with a max duration of 6 months).
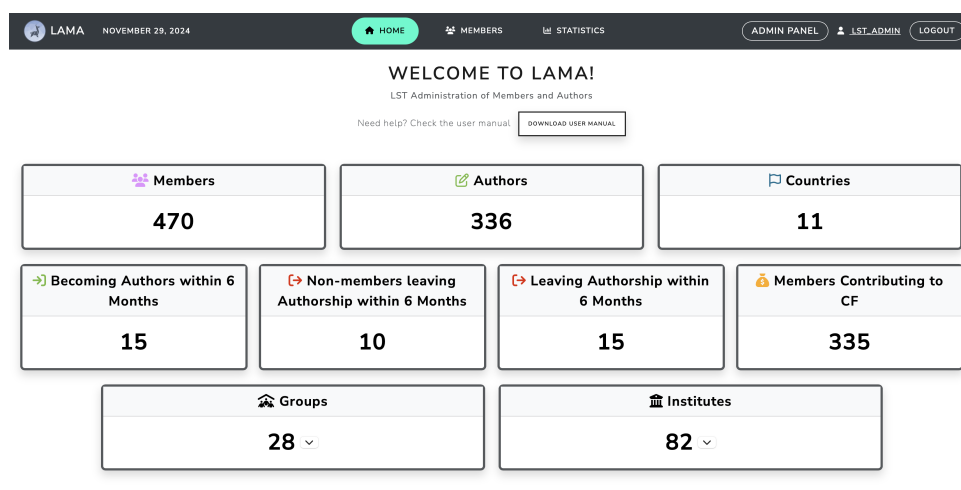
Figure 3.2 – Home view.

- Number of members who will leave authorship within the next 6 months.

- Number of members contributing to the Common Fund (CF).

These key statistics are presented in summary cards for an at-a-glance overview of the most relevant data.

3.3   Members Page

The **Members Page**, displayed in Fig. 3.3, is where users can view and manage the list of members and their associated details. It is one of the main functionalities of the LAMA system, and it provides a detailed view of all members, their roles, and key information about their status within the collaboration.

The table on the Members Page includes includes several filters on the top left (Fig. 3.4) that help users refine the displayed data. These filters allow users to search for members based on specific criteria. There is also a search bar that enables searching for any written pattern. By default, the table shows only active members, excluding former members. To include past members, users can use the toggle switch 〇. When active, the toggle switch turns green 〇.

Filters are designed to be simple, offering drop-down selection options for the following criteria:

- **Country Filter**: Users can select a country from a drop-down list. The page will display only members associated with that country.

- **Group Filter**: This filter allows users to select a specific group. Only members belonging to the selected group will be displayed. By default, all groups are selected.

- **Institute Filter**: This filter narrows down the list of members by selecting a specific institute. It will only show members associated with the selected institute.

- **Authors**: This filter enables users to display only members who are currently authors. The calculation for is an author is done

(a) Admin view.

(b) User view.

Figure 3.3 – Comparison of Admin and User views of the Members Page.

Figure 3.4 – Filters for the member list.

- **CF**: This filter enables users to display only members who are currently contributing to the Common Fund (CF).

Each of these filters can be selected independently, and the Members List will update dynamically as each filter is applied.

The filters for Country, Group, and Institute are interconnected. When a country is se-

lected, the Group filter will display only the groups within that country, and upon selecting a group, the Institute filter will display only institutes associated with the selected group.

To reset the filter selections, click on the **Clear Filter** button CLEAR FILTERS located on the right side of the page.

3.3.1 Calculation of the "Is Author" and "CF" Columns

Two key columns in the Members Table are **Is Author** and **CF** (Contributing to Common Fund). These fields are calculated as follows:

- **Is Author**: A member is marked as an author if:

  1. They have an `authorship_start` date.
  2. The current date (`today`) is after the `authorship_start` date.
  3. Either:
     - The `authorship_end` date is not set, or
     - The `authorship_end` date is in the future.

  If any of these conditions change, the member's `is_author` field is updated in the database.

- **CF**: A member is marked as contributing to the Common Fund if:

  1. They have an `authorship_start` date.
  2. The `authorship_start` date is less than or equal to a date six months in the future (`six_months_future`).
  3. Either:
     - The `authorship_end` date is not set, or
     - The `authorship_end` date is after `six_months_future`.

  The `six_months_future` threshold is calculated as the current date plus six months, using the `relativedelta` module from Python's `dateutil` package, rather than simply adding 180 days. This allows to account for months with different numbers of days as leap years. The `relativedelta(months=6)` expression guarantees that exactly six calendar months are added to the current date, taking these variations into account, making the calculation more reliable and accurate than adding a fixed number of days (e.g., 180 days). This ensures that CF eligibility accounts for members whose authorship starts within the next six months.

These calculations ensure that the **Is Author** and **CF** statuses are dynamically updated based on the member's data.

3.3.2 Exporting Data

There is also the option to download the filtered data in several formats, by clicking on the corresponding button Copy CSV Excel Print . The export options available are:
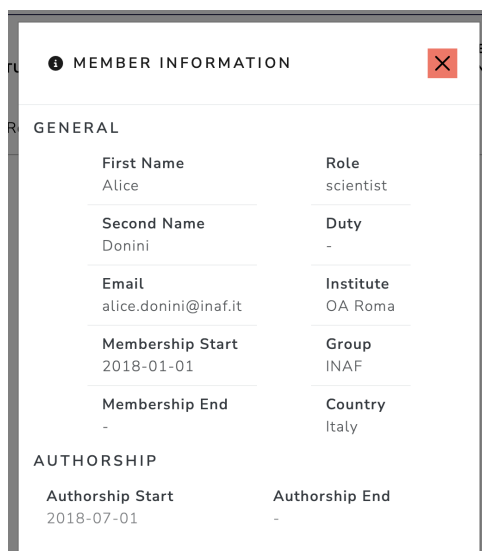
- **Copy** (to Clipboard)

- **CSV** Format

- **Excel** Format

- **Print**

These options will export the data currently displayed on the Members List. If filters are applied, only the filtered results will be exported.

3.3.3   Info Button

In the **Details** column of the table, there is an **Info** button ⓘ that provides more detailed information about each member. Clicking this button opens a pop‑up window (Fig. 3.5) that shows additional details such as:

- The member's full name, membership start and end dates.

- Their current status, including whether they are an author.

- Duties within the collaboration.

- Historical data, such as previous group affiliations or changes in role over time.

Figure 3.5 – Modal showing member information.

3.3.4   Add Member Button

For users with admin permission level, there is the option to add members by clicking the **Add Member** button [+ New Member] on the top left of the page (see Fig. 3.3a). After clicking this button, a modal will open, allowing the user to input the necessary information for adding a new member (see Fig. 3.6a). The requested fields are:

- **First Name** and **Surname** (mandatory)

- **Primary Email** (mandatory)

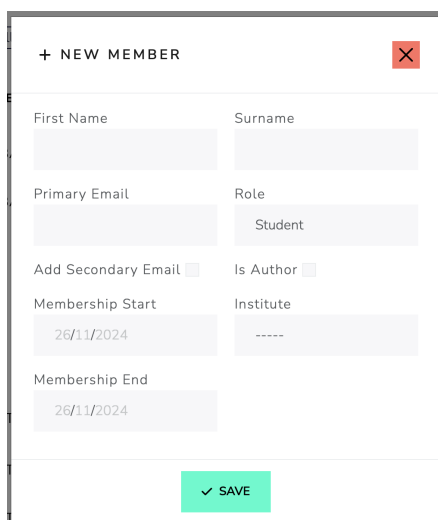- **Role**

- **Membership Start** and **Membership End** (the end date can be left blank)

- **Institute** (mandatory)
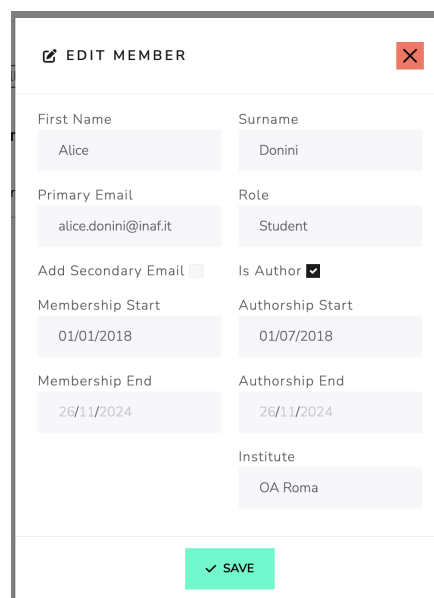
Additionally, there are check‑boxes for:

- **Is Author**: If checked, **the authorship start date will be automatically set to 6 months after the start of the membership**.

- **Secondary Email**: If checked, a new input field will appear where a secondary email address can be added.

(a) Modal to add a new member.

(b) Modal to edit member's data.

Figure 3.6 – The two modal accessible to manage member information for admin users.

3.3.5   Edit Member Button

For users with admin permission level, an **Edit** button 🖉 is available in the **Details** column of the table. This button allows users to edit any information related to the member.

3.4   Statistics Page

The **Statistics Page** provides users with visual insights into the collaboration's dynamics. This page includes:

- **Summary Cards**: that show the total number of members and authors.

- **Tables for Countries and Groups**: tables summarizing the total number of members and authors, both in absolute numbers and percentages, along with their average number over the last 12 months.

- **Trend Analysis**: interactive charts to visualize member and author trends over time.
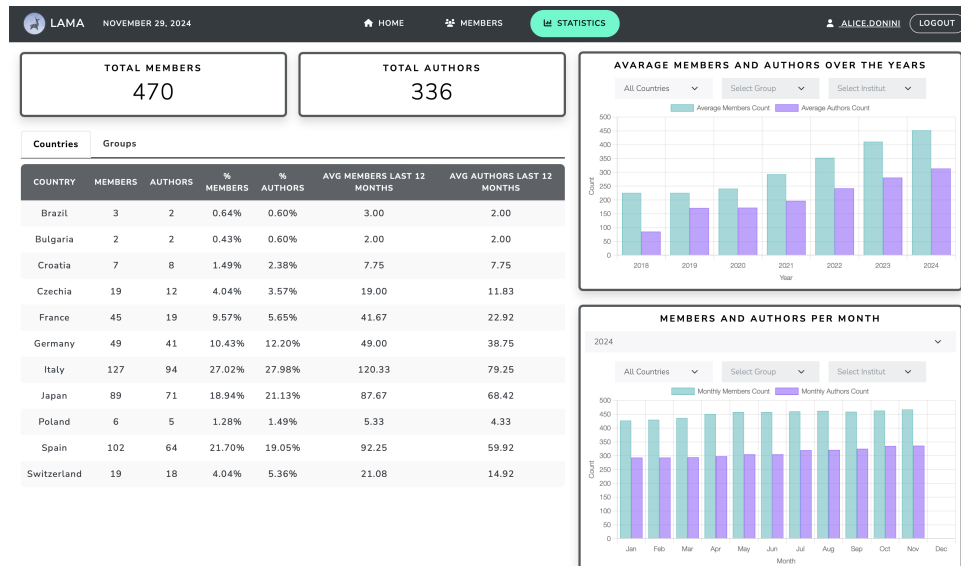
Figure 3.7 – Statistic page view.

3.4.1 Cards

Two cards display the total number of **Members** and **Authors**. The calculations for these totals are as follows:

- **Total Members**: The total number of active members is calculated by filtering members whose membership `end_date` is either in the future or not set. Specifically, members are selected where:

  - Their `end_date` is greater than the current date (`today`), or
  - Their `end_date` is null, meaning their membership has no defined end date and is ongoing.

  This ensures that only currently active members are included in the count.

- **Total Authors**: The total number of authors is calculated by checking members who have an `authorship_start` date that is less than or equal to the current date, and either:

  - Their `authorship_end` date is null (indicating ongoing authorship), or
  - Their `authorship_end` date is after the current date.

  This ensures that only members whose authorship is currently active (or ongoing) are counted as authors.

These calculations are performed dynamically to ensure that the total number of **Members** and **Authors** displayed on the Statistics Page accurately reflects the current status based on the latest membership and authorship data.

3.4.2 Tables for Countries and Groups

The data tables for countries and groups show detailed statistics on members and authors over the last 12 months, broken down by the following:

3.4.2.1   1. Countries

The table for countries shows the total number of members and authors in each country, the percentage of the total collaboration members and authors, as well as the average number of members and authors over the last 12 months.

- **Members by Country**: The count of active members in each country is based on their membership start and end dates wrt to the current date. The query filters members whose membership start date is before or equal to today's date and whose end date is either null or after today. This ensures that only members and authors who are currently active (i.e., their membership or authorship is ongoing) are included in the count.

- **Authors by Country**: The count of active authors in each country is based on their authorship start and end dates wrt to the current date. The query filters authors whose authorship start date is before or equal to today's date and whose authorship end date is either null or after today.

- For each country, the percentages of active members and authors are calculated relative to the total number of active members and authors in the entire collaboration.

- The average number of members and authors over the last 12 months is calculated by evaluating **the count of active members or authors on the 15th of each month**. Specifically:
  - If the current date is before the 15th of the month, the calculation starts from the 15th of the previous month and excludes the current month.
  - If the current date is on or after the 15th, the calculation includes the current month, starting from the 15th.
  - For each of the last 12 months, the active members or authors are counted by filtering records where the start date is less than or equal to the 15th of the month and the end date is either null or after the 15th.
  - These monthly counts are then averaged over the 12-month period.

3.4.2.2   2. Groups

The table for groups provides a similar breakdown, showing the total number of members and authors in each group, their percentages of the total collaboration members and authors, and their averages over the last 12 months.

- **Members by Group**: The count of active members in each group is calculated similarly to the country count. Members in a specific group are filtered by their membership start and end dates relative to the current date.

- **Authors by Group**: The count of active authors in each group is calculated in the same way as the country-based authorship counts. Authors are filtered by their authorship start and end dates.

- **Percentages**: For each group, the percentages of active members and authors are calculated relative to the total number of active members and authors in the collaboration.

- The average number of members and authors over the last 12 months is calculated similarly to the country table:

  - If the current date is before the 15th of the month, the calculation starts from the 15th of the previous month and excludes the current month.
  - If the current date is on or after the 15th, the calculation includes the current month, starting from the 15th.
  - For each of the last 12 months, the active members or authors are counted by filtering records where the start date is less than or equal to the 15th of the month and the end date is either null or after the 15th.
  - These monthly counts are then averaged over the 12-month period, providing insights into group-specific trends over time.

3.4.3 Histograms

There are two histograms on the statistics page: one displays the **Average Members and Authors Over the Years**, and the other shows the **Members and Authors Per Month** for a selected year.

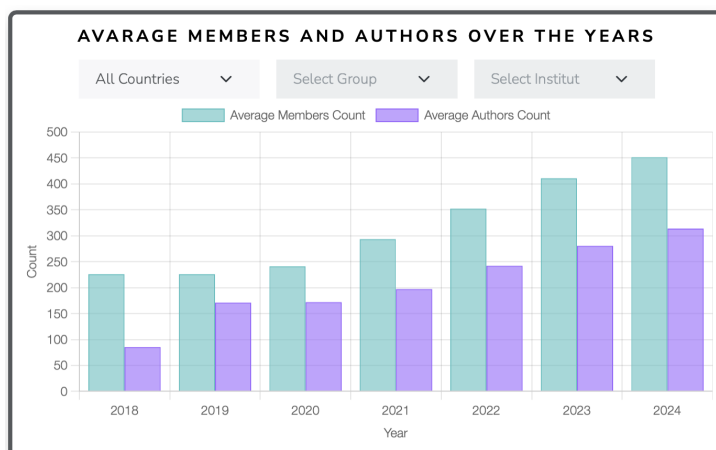### 3.4.3.1 Average Members and Authors per Year

Figure 3.8 – Average Members and Authors Over the Years histogram.

The histogram that displays the average number of members and authors over the years is generated by calculating yearly averages based on the selected filters (such as country, group, and institute). The average number of members and authors per year is computed by evaluating the active counts on the 15th of each month within the year. The calculation considers whether the year is the current year or a previous one:

- **For the current year**: The average is based on the counts up to the current month. For each month, the active members or authors are filtered and counted as those whose:

- Membership or authorship start date is on or before the 15th of the month.
- Membership or authorship end date is either null or after the 15th of the month.

The counts for all considered months are then averaged by dividing the total count by the number of months elapsed in the current year (e.g., up to November for a query executed in November).

- **For previous years**: The average is calculated using the counts for all 12 months. Similar filtering criteria are applied for each month, but the divisor is fixed at 12, representing the total months in the year.

The calculated averages are displayed in a histogram, where the x-axis represents the years (e.g., 2018 to the current year), and the y-axis represents the average counts of members and authors. Separate lines are plotted for members and authors to visualize their trends over time.

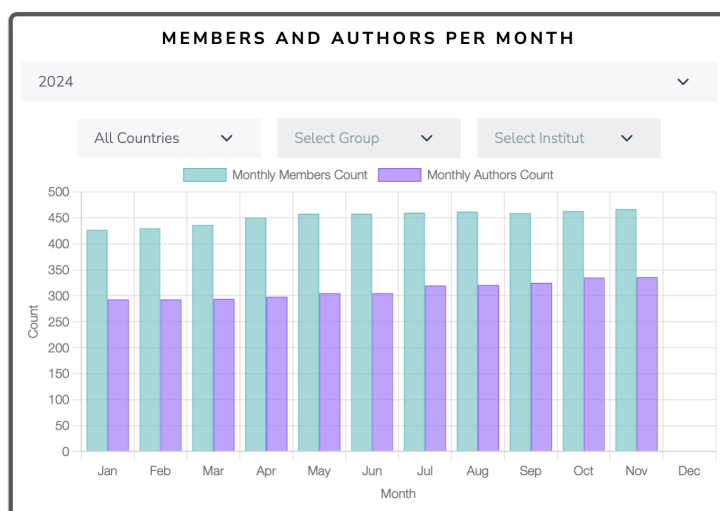### 3.4.3.2 Members and Authors Per Month

Figure 3.9 – Members and Authors Per Month histogram.

This histogram shows monthly trends in the number of active members and authors for a selected year. Users can apply filters such as **Year**, **Country**, **Group**, and **Institute** to explore specific subsets of data. If no filters are applied, the visualization shows all members and authors for the chosen year, offering a comprehensive overview.

Data Filters: The data displayed in the histogram dynamically adjusts based on the filters selected:

- **Year:** Choose a specific year to visualize its monthly activity.
- **Country:** Narrow the data to members and authors associated with a specific country.
- **Group:** Focus on members and authors from a particular group.
- **Institute:** Drill down to data associated with a specific institute.

When no specific selections are made, all data for the chosen year is displayed by default.

Monthly Active Count For each month in the selected year, active members and authors are identified based on the following criteria:

- **Active Members:**

  - Their membership start date is on or before the 15th of the month.
  - Their membership end date is either null or occurs after the 15th of the month.

- **Active Authors:**

  - Their authorship start date is on or before the 15th of the month.
  - Their authorship end date is either null or occurs after the 15th of the month.

These criteria ensure that all members and authors contributing to activity within a given month are accurately counted. The histogram considers the data up to the current month. If the selected year matches the current year, the data will include only months up to the current month. For years earlier than the current year, data is included for all 12 months.

3.5 Admin Panel

For users with `Admin` permissions, the **Admin Panel** provides access to the Django admin site. Here, administrators can manage system settings, permissions, and perform tasks such as:

- Viewing and editing user roles and permissions.

- Managing group associations and ensuring correct access rights for each user.

- Monitoring and managing all data within the system.