

Logotipo

Descripción generada automáticamente

**FUNCTIONAL ANALYSIS Document**

**Functional Analysis Document**

**Introduction**

**Purpose**

The purpose of this document is to define the functional requirements for the web application that will allow authenticated users to upload, manage, and share musical content. This document will serve as a guide for the development and implementation of the application.

**Scope**

The application will be targeted at music students and teachers in an educational environment, enabling the creation, management, and evaluation of musical compositions.

**Functional Requirements**

**Registration**

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| **Requirement: RF-001. NASA should be able to launch a new annual challenge for “National Space Day” through the platform.** | | | |
| **Description** | NASA should be able to launch a new annual challenge for “National Space Day” through the platform | | |
| **Priority** | High | | |
| **Scope** | NASA should be able to launch a new annual challenge for “National Space Day” through the platform. This should trigger a personalized email to all users already registered on the platform with a link to access the complete information. | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RF-002. The platform must have all the information about the new challenge to be posed along with the rules of participation.** | | | |
| **Description** | The platform describes the rules of participation. | | |
| **Priority** | High | | |
| **Scope** | The platform must have all the information about the new challenge to be posed along with the rules of participation. | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RF-003. In order to participate and upload songs to the platform you must be previously registered.** | | | |
| **Description** | In order to participate and upload songs to the platform you must be previously registered. | | |
| **Priority** | High | | |
| **Scope** | In order to participate and upload songs to the platform you must be previously registered. | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RF-004** **Registration must be at the community level.** | | | |
| **Description** | Registration must be at the community level. For registration, the following data is needed: Community data, responsible person and list of mentors. | | |
| **Priority** | High | | |
| **Scope** | For registration, the following data is needed:   * Community data * Responsible person * List of mentors | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RF-005 Each community can create different groups.** | | | |
| **Description** | Each community can create different groups. The team should only be created by a mentor | | |
| **Priority** | High | | |
| **Scope** | The information that must be registered for a team is:   * Name of the team * Community to which it belongs * Members   Each mentor registers the team members on the platform. | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RF-006 Each member must accept the participation rules to be able to participate in a challenge.** | | | |
| **Description** | Each member must accept the participation rules to be able to participate in a challenge. | | |
| **Priority** | High | | |
| **Scope** | Each member must accept the participation rules to be able to participate in a challenge. | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
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| **Requirement: RF-007 Only groups can participate in a challenge and upload one or more songs that must be validated by the mentor.** | | | |
| **Description** | Only groups can participate in a challenge and upload one or more songs that must be validated by the mentor. | | |
| **Priority** | High | | |
| **Scope** | Only groups can participate in a challenge and upload one or more songs that must be validated by the mentor. | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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**Platform: Musical Content Upload**

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| **Requirement: RF-008 It must include information obtained from NASA on exoplanets. This information must be real and obtained from the documentation offered by NASA.** | | | |
| **Description** | It must include information obtained from NASA on exoplanets. This information must be real and obtained from the documentation offered by NASA | | |
| **Priority** | High | | |
| **Scope** | Only groups can participate in a challenge and upload one or more songs that must be validated by the mentor. | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RF-009 A search engine must be carried out to search for an exoplanet, either by name or by certain characteristics.** | | | |
| **Description** | A search engine must be carried out to search for an exoplanet, either by name or by certain characteristics. | | |
| **Priority** | High | | |
| **Scope** | A search engine must be carried out to search for an exoplanet, either by name or by certain characteristics. | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RF-010 Exoplanet information must be categorized and accessible.** | | | |
| **Description** | Exoplanet information must be categorized and accessible | | |
| **Priority** | High | | |
| **Scope** | Exoplanet information must be categorized and accessible | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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**Songs**

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| **Requirement: RF-012 One song must be uploaded to the platform for each group created.** | | | |
| **Description** | One song must be uploaded to the platform for each group created. | | |
| **Priority** | High | | |
| **Scope** | One song must be uploaded to the platform for each group created. | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
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| **Requirement: RF-013 Information about the songs must be collected.** | | | |
| **Description** | Information about the songs must be collected | | |
| **Priority** | High | | |
| **Scope** | For each song the following must be recorded:   * Chosen exoplanet * Written letter * Song name * Archive * Category | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RF-014 The songs uploaded, validated and accepted by the mentor must be previously validated by the platform before it is globally visible** | | | |
| **Description** | The songs uploaded, validated and accepted by the mentor must be previously validated by the platform before it is globally visible | | |
| **Priority** | High | | |
| **Scope** | The songs uploaded, validated and accepted by the mentor must be previously validated by the platform before it is globally visible: review of the language used in the songs, review of plagiarism... this process must be carried out by a system based on artificial intelligence in Models Semantic Similarity. | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RF-015 Each team must have carried out prior research on exoplanets, so it must be possible to view the exoplanets visited by each logged-in person and the time spent on each of them.** | | | |
| **Description** | Each team must have carried out prior research on exoplanets, so it must be possible to view the exoplanets visited by each logged-in person and the time spent on each of them. | | |
| **Priority** | High | | |
| **Scope** | Each team must have carried out prior research on exoplanets, so it must be possible to view the exoplanets visited by each logged-in person and the time spent on each of them. | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RF-016 For each song, the application associates a video clip generated with information about the selected exoplanet.** | | | |
| **Description** | For each song, the application associates a video clip generated with information about the selected exoplanet that will vary depending on the timbre, intensity and duration of the uploaded song. | | |
| **Priority** | High | | |
| **Scope** | The video clip will include the lyrics as a subtitle. | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RF-017** **You must check that each song meets the different criteria.** | | | |
| **Description** | You must check that each song meets the different criteria | | |
| **Priority** | High | | |
| **Scope** | You must check that each song meets the following criteria:   * The lyrics of the song should be based on information related to the selected exoplanet * You must ensure that X% of the song content is related to the exoplanet * The lyrics and music must be original   The review of the song must be carried out by artificial intelligence based on Natural Language Processing (NLP). | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RF-017** **The scoring and order of the songs will be done taking into account the different criteria.** | | | |
| **Description** | You must check that each song meets the different criteria | | |
| **Priority** | High | | |
| **Scope** | The scoring and order of the songs will be done taking into account the following criteria:   1. Song of an exoplanet with fewer songs 2. Higher % coincidence with exoplanet information 3. Greater number of global views. | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RF-017** **You must be able to play all the songs uploaded to the platform for a given challenge** | | | |
| **Description** | You must be able to play all the songs uploaded to the platform for a given challenge | | |
| **Priority** | High | | |
| **Scope** | A song must be searchable by community, team, category and/or exoplanet. | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RF-020** **The songs played must be those that are validated by the system.** | | | |
| **Description** | The songs played must be those that are validated by the system. | | |
| **Priority** | High | | |
| **Scope** | The songs played must be those that are validated by the system. | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
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| **Requirement: RF-021** **Songs that do not pass the validation process must be notified through an alert on the platform to the group.** | | | |
| **Description** | Songs that do not pass the validation process must be notified through an alert on the platform to the group. | | |
| **Priority** | High | | |
| **Scope** | Songs that do not pass the validation process must be notified through an alert on the platform to the group. | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
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| **Requirement: RF-021** **The uploaded songs cannot be downloaded from the platform but they can be shared** | | | |
| **Description** | The uploaded songs cannot be downloaded from the platform but they can be shared | | |
| **Priority** | High | | |
| **Scope** | The uploaded songs cannot be downloaded from the platform but they can be shared | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
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| **Requirement: RF-022** **The uploaded songs cannot be downloaded from the platform but they can be shared** | | | |
| **Description** | The uploaded songs cannot be downloaded from the platform but they can be shared | | |
| **Priority** | High | | |
| **Scope** | The uploaded songs cannot be downloaded from the platform but they can be shared | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
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| **Requirement: RF-023** **A mentor or member can view the approved songs that are published on the platform.** | | | |
| **Description** | A mentor or member can view the approved songs that are published on the platform. | | |
| **Priority** | High | | |
| **Scope** | A mentor or member can view the approved songs that are published on the platform. | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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**Non-Functional Requirements**

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| **Requirement: RNF-001 Information about exoplanets must be visual (videos with subtitles) and textual, in several languages.** | | | |
| **Description** | Information about exoplanets must be visual (videos with subtitles) and textual, in several languages. | | |
| **Priority** | High | | |
| **Scope** | Information about exoplanets must be visual (videos with subtitles) and textual, in several languages. | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
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| **Requirement: RNF-002 The volume of information that will be handled will be around 3,000 songs in each annual challenge.** | | | |
| **Description** | The volume of information that will be handled will be around 3,000 songs in each annual challenge | | |
| **Priority** | High | | |
| **Scope** | The volume of information that will be handled will be around 3,000 songs in each annual challenge | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RNF-002 The volume of information that will be handled will be around 3,000 songs in each annual challenge.** | | | |
| **Description** | The volume of information that will be handled will be around 3,000 songs in each annual challenge | | |
| **Priority** | High | | |
| **Scope** | The volume of information that will be handled will be around 3,000 songs in each annual challenge | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RNF-003 Performance.** | | | |
| **Description** | Response Time: The system must respond to user requests in less than 2 seconds.  Load Capacity: It should support at least 1000 concurrent users without performance degradation. | | |
| **Priority** | High | | |
| **Scope** |  | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RNF-004 Usability.** | | | |
| **Description** | Ease of Use: The interface must be intuitive, allowing a new user to complete basic tasks in under 10 minutes.  Accessibility: The system must be compatible with screen readers and comply with WCAG 2.1 guidelines. | | |
| **Priority** | High | | |
| **Scope** |  | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RNF-005 Security.** | | | |
| **Description** | Authentication: All users must authenticate through a two-factor login process.  Data Protection: Sensitive data must be encrypted both in transit and at rest. | | |
| **Priority** | High | | |
| **Scope** |  | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
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| **Requirement: RNF-006 Maintainability.** | | | |
| **Description** | Documentation: All code must be well-documented, and each module should have a user manual.  Modularity: The system should be designed so that functionalities can be added or modified without affecting the rest of the system. | | |
| **Priority** | High | | |
| **Scope** |  | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
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| **Requirement: RNF-007 Scalability.** | | | |
| **Description** | Horizontal Scalability: The system must allow adding more servers to handle increased load without modifying the existing software.  Vertical Scalability: It should be possible to upgrade server hardware to improve performance. | | |
| **Priority** | High | | |
| **Scope** |  | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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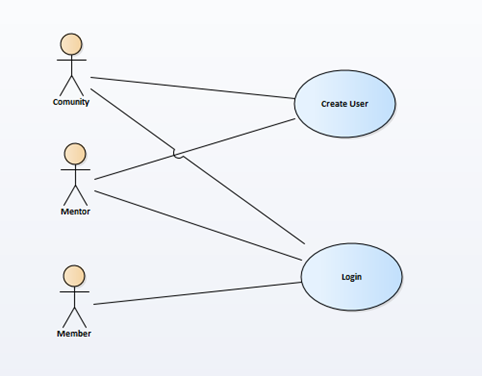
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| **Requirement: RNF-008 Availability.** | | | |
| **Description** | Uptime: The system should have 99.9% uptime, equating to a maximum downtime of 43.2 minutes per month.  Disaster Recovery: The system must be able to recover from critical failures in less than 30 minutes. | | |
| **Priority** | High | | |
| **Scope** |  | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RNF-009 Legality and Compliance.** | | | |
| **Description** | Regulatory Compliance: It must comply with specific industry regulations, such as GDPR for personal data protection.  Licenses: The use of third-party software must adhere to established licenses and terms. | | |
| **Priority** | High | | |
| **Scope** |  | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
| **Modif. version** | **Modif. data** | **Description** | |
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| **Requirement: RNF-010 Uses of IA** | | | |
| **Description** | The artificial intelligence used to detect inappropriate language in song lyrics is typically based on Natural Language Processing (NLP) and Semantic Similarity Models are very effective in detecting plagiarism | | |
| **Priority** | High | | |
| **Scope** |  | | |
| **High version** | 1.0 | **High data** | 05/10/2024 |
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**Use Case**

**Login and registration**



*Ilustración 1 Login and registration*

**Log in**

* **Description:** A user logs into the platform.
* **Actors:** User (Mentor or Member), System.
* **Main Flow:**

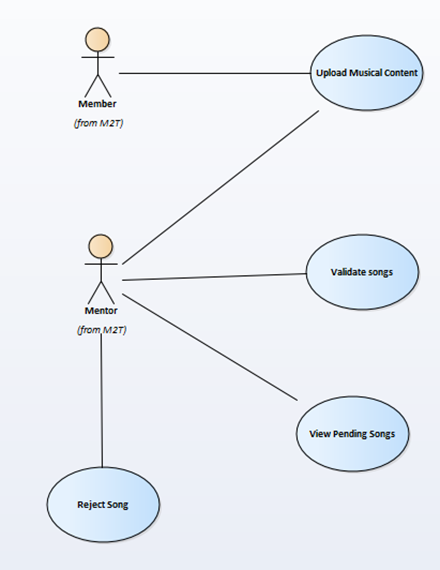
1. The user enters their credentials (email and password).
2. The system verifies the credentials.
3. If the credentials are correct, the system grants access.

* Post-condition: The user is logged in and can access the functionalities based on their role (mentor or member).

**Register User (Mentor or Member)**

* **Description**: A new user (mentor or member) registers on the platform.
* **Actors**: User (Mentor or Member), System.
* **Main Flow**:
  1. The user enters their details (name, email, role, team if applicable).
  2. The system verifies the information.
  3. The system registers the user and sends a confirmation email.
  4. The user confirms their account via the email.
* **Post-condition**: The user is successfully registered on the platform.

**Upload Musical Content**



*Ilustración 2* Upload Musical Content

**Use Case Name**: Upload Song to Platform

* **Primary Actor**: Registered Member (e.g., content creator or musician)
* **Description**: A registered member can upload a song to the platform, providing the necessary metadata and song details.

#### **Main Flow:**

* The **member** logs into the platform with valid credentials.
* The member navigates to the "Upload Song" section of the platform.
* The system presents an upload form where the member provides the following information:
  + **Song file**: The member selects the audio file to upload (supported formats: MP3, WAV, etc.).
  + **Song title**: The member enters the title of the song.
  + **Description**: The member provides a brief description of the song (optional).
  + **Tags/Keywords**: The member adds relevant tags or keywords to help categorize the song (e.g., genre, mood, themes).
  + **Exoplanet-related keywords** (optional): If the song is about or inspired by exoplanets, the member can add specific exoplanet-related keywords.
  + **Genre**: The member selects the genre of the song from a predefined list (e.g., rock, electronic, classical).
  + **License type**: The member specifies the licensing for the song (e.g., Creative Commons, copyright-protected).
* The system validates the input and checks that:
  + The audio file is in a supported format and does not exceed the maximum size limit.
  + The mandatory fields (e.g., title, file) are filled out.
* The member submits the form, and the system uploads the song to the server.
* The system performs an initial **AI validation** (e.g., for copyright and content appropriateness).
  + If the song passes validation, the system publishes the song on the platform.
  + If the song fails validation (e.g., contains copyrighted material), the system notifies the member with details on why the song was rejected and potential actions they can take.
* Once published, the member receives a confirmation that the song is live on the platform.
* The member can access the song’s page, where they can view statistics such as the number of views, likes, and comments.

#### **Exceptions:**

* **File format issues**: If the member uploads a file in an unsupported format, the system prompts the member to upload a valid file.
* **Incomplete information**: If mandatory fields are left blank, the system highlights the missing fields and prevents submission until all required information is provided.
* **Validation failure**: If the song does not pass AI validation (e.g., due to copyright concerns or inappropriate content), the system prevents the song from being published and notifies the member.

**Use Case Name**: Mentor Validates Uploaded Song

* **Primary Actor**: Mentor (trusted user or moderator with validation permissions)
* **Supporting Actor**: System, Registered Member (who uploaded the song)
* **Description**: A Mentor reviews and validates a song uploaded by a registered member, ensuring it meets platform guidelines and quality standards before publication.

#### **Main Flow:**

1. The **mentor** logs into the platform using their credentials.
2. The mentor navigates to the **"Pending Song Validations"** section, where they can view a list of songs awaiting review.
3. The mentor selects a specific song uploaded by a registered member for validation.
4. The system presents the mentor with the following information about the song:
   * Song title, description, tags, and genre.
   * Audio file (for playback).
   * Results from the **initial AI validation**, including any flagged issues (e.g., possible copyright violations, inappropriate content, or audio quality concerns).
5. The mentor listens to the song and manually reviews the following:
   * **Content quality**: Ensures the song meets platform quality standards (e.g., audio clarity, relevance to the platform’s theme).
   * **Content appropriateness**: Verifies that the song does not contain offensive or inappropriate material.
   * **Copyright status**: Confirms that the song does not infringe on any copyrights or, if flagged, ensures that it is properly licensed.
   * **Exoplanet-related keywords**: If applicable, the mentor verifies that any exoplanet-related keywords entered are accurate and relevant to the song’s content.
6. Based on their review, the mentor chooses one of the following options:
   * **Approve**: If the song meets all criteria, the mentor approves it for publication.
   * **Reject**: If the song does not meet platform standards (e.g., contains copyrighted material or inappropriate content), the mentor rejects it and provides feedback to the member.
   * **Request Modifications**: If minor adjustments are needed (e.g., fix audio quality, update metadata), the mentor requests changes and notifies the member.
7. The system records the mentor’s decision and:
   * **If approved**, publishes the song on the platform and notifies the member.
   * **If rejected**, notifies the member with reasons for rejection and instructions on how to resolve the issues.
   * **If modifications are requested**, the system notifies the member to update the song based on the mentor’s feedback.
8. The mentor’s validation activity is logged for auditing purposes.

#### **Exceptions:**

* **Song already approved by AI**: If the song has passed all AI checks without issues, the mentor can choose to perform a lighter review or approve the song based on AI results.
* **Mentor faces technical issues**: If the mentor cannot access the audio file or metadata, the system notifies the technical team to resolve the issue and allows the mentor to retry the validation.
* **Conflicting feedback**: If a mentor's decision conflicts with another mentor’s review (e.g., one approved, one rejected), the system escalates the song for further review by an administrator.

**Use Case Name**: View Pending Song Validations

* **Primary Actor**: Mentor
* **Description**: The mentor can view a list of songs that are awaiting their validation. This list helps the mentor prioritize which songs to review and approve, reject, or request modifications.

#### **Main Flow:**

* The **mentor** logs into the platform with their credentials.
* The mentor navigates to the **"Validation Dashboard"** or **"Pending Song Validations"** section.
* The system displays a list of songs that are awaiting validation, including key details such as:
  + **Song title**.
  + **Upload date**.
  + **Uploaded by** (member’s username).
  + **Number of views** (if already available for pre-release listening).
  + **AI validation results** (summary of any issues flagged by the AI system, e.g., copyright warnings or content concerns).
  + **Priority level** (e.g., based on time since upload or importance).
* The mentor can sort or filter the list by various criteria, such as:
  + Date uploaded.
  + Priority level.
  + Songs flagged by the AI for potential issues.
  + Songs from specific members (if needed).
* The mentor selects a specific song from the list to begin the review process.
* The system redirects the mentor to the song’s validation page, where they can listen to the song and perform a detailed review (as described in the "Mentor Validates Uploaded Song" use case).
* The system updates the list dynamically, removing songs that have been reviewed or reordering based on updated criteria (e.g., new uploads or higher-priority songs).

#### **Exceptions:**

* **No songs pending**: If there are no songs currently pending validation, the system displays a message indicating that the mentor has no pending tasks.
* **Filtering or sorting issues**: If there is an issue with filtering or sorting (e.g., a system error), the mentor can view the default list while the system resolves the issue.
* **Large volume of songs**: If there are too many pending songs, the system paginates the results or provides additional filters to make the list manageable.

**Use Case Name**: Reject Song and Trigger Alert

* **Primary Actor**: Mentor
* **Supporting Actor**: System, Registered Member (who uploaded the song)
* **Description**: The mentor can reject a song during the validation process, triggering an alert on the platform to notify the member and relevant platform administrators about the rejection and its reasons.

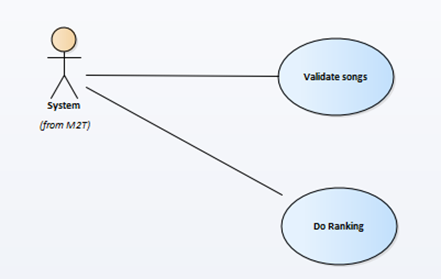
#### **Main Flow:**

1. The **mentor** logs into the platform and navigates to the **"Pending Song Validations"** section.
2. The mentor selects a specific song from the pending list to review.
3. The system presents the details of the song, including the title, lyrics, tags, audio file, and any AI validation results.
4. The mentor reviews the song and identifies one or more reasons to reject it, such as:
   1. **Copyright infringement**.
   2. **Inappropriate content** (e.g., offensive language, hate speech).
   3. **Poor audio quality**.
   4. **Non-compliance with platform guidelines**.
5. The mentor selects the **"Reject"** option.
6. The system prompts the mentor to provide specific feedback, requiring the mentor to:
   1. **Select the reason(s) for rejection** from a predefined list (e.g., copyright violation, inappropriate content).
   2. **Add optional comments** to give further explanation or suggestions for improvement.
7. The system records the rejection and triggers an **alert** on the platform, which includes:
   1. A notification to the **member** who uploaded the song, informing them of the rejection and the specific reasons.
   2. A flag in the **administration panel** to notify platform administrators, especially if the rejection involves serious issues (e.g., potential legal or content concerns).
8. The **alert** appears in the **member’s dashboard** as a notification. The alert includes the rejection reason and any comments from the mentor, along with suggestions on how to resolve the issue (e.g., replace copyrighted material, remove explicit content).
9. The system updates the song’s status to **"Rejected"** and removes it from the public view or from pending publication, if applicable.
10. The mentor can view a list of all rejected songs they’ve reviewed for future reference.

#### **Exceptions:**

* **Rejection due to technical issues**: If the mentor rejects the song due to technical problems (e.g., file corruption), the system notifies the member to re-upload the song.
* **Serious violation**: If the song contains severe violations (e.g., hate speech, copyright infringement), the system escalates the alert to platform administrators for further action (e.g., account suspension or legal review).
* **Alert system failure**: If the alert cannot be triggered due to a system error, the system retries the action or flags the issue

**Content Rating**



*Ilustración 3 Validate y make ranking*

**Use Case Name**: Validate Song Using Artificial Intelligence

* **Primary Actor**: AI System
* **Supporting Actor**: Content Creator / User Uploading the Song
* **Description**: The AI system automatically validates a song uploaded by a user to ensure it meets the platform’s standards and guidelines (e.g., copyright compliance, content appropriateness, sound quality).

#### **Main Flow:**

* The **user** uploads a song to the platform.
* The system receives the song and sends it to the **AI validation module**.
* The **AI system** performs various checks, including:
  + **Copyright validation**: The AI analyzes the song’s audio and metadata to detect potential copyright violations or determine if the song is an original creation or includes licensed content.
  + **Content appropriateness**: The AI scans the lyrics and audio for inappropriate language, hate speech, or explicit content based on predefined guidelines.
  + **Sound quality check**: The AI assesses technical aspects such as volume, noise levels, and audio clarity to ensure that the song meets platform quality standards.
  + **Genre classification and tagging**: The AI attempts to classify the song’s genre and suggest appropriate metadata for discovery.
* The AI system generates a validation report with the following possible outcomes:
  + **Approval**: The song meets all requirements and is approved for publication.
  + **Rejection**: The song fails one or more checks (e.g., copyright violation, inappropriate content) and is flagged for rejection.
  + **Partial approval with recommendations**: The song passes most checks but requires minor adjustments (e.g., volume normalization) before publication.
* The system notifies the user of the validation outcome:
  + If approved, the song is ready for publication.
  + If rejected, the user is informed of the specific reasons and provided with suggestions for resolving the issues (e.g., remove copyrighted material).
* The system stores the validation results for future reference.

#### **Exceptions:**

* If the AI system encounters a technical issue during validation, it retries the process. If the issue persists, the system escalates the task to a human moderator for manual review.

**Use Case Name**: Rank Songs Based on Views and Exoplanet Keywords

* **Primary Actor**: AI System
* **Supporting Actor**: Administrator / User Viewing Rankings
* **Description**: The AI system ranks songs based on a combination of the number of views and the presence of exoplanet-related keywords within the song's lyrics. The ranking is displayed to users on the platform.

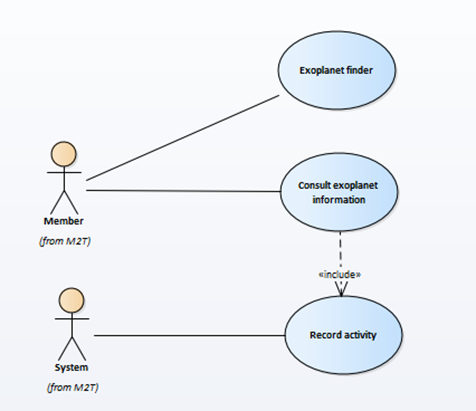
#### **Main Flow:**

1. The **administrator** or **user** requests a song ranking based on views and exoplanet-related keywords.
2. The **AI system** retrieves the list of songs stored on the platform and collects the following data for each song:
   1. Number of views.
   2. Lyrics and metadata associated with each song.
3. The **AI system** analyzes the lyrics of each song for the presence of keywords related to exoplanets, such as:
   1. Specific terms: "exoplanet," "orbit," "habitable zone," "star," "atmosphere," "light-years," "discovery," etc.
   2. Synonyms and relevant astronomical terms.
4. The system assigns a **keyword relevance score** to each song based on the frequency and importance of exoplanet-related terms found in the lyrics.
5. The system combines the **keyword relevance score** with the **number of views** to generate a final ranking score for each song. This score is calculated as:
   1. *Ranking Score=α(Number of Views)+β(Keyword Relevance Score)\text{Ranking Score} = \alpha (\text{Number of Views}) + \beta (\text{Keyword Relevance Score})*Ranking Score=α(Number of Views)+β(Keyword Relevance Score) where *α\alpha*α and *β\beta*β are weight factors determined by the platform’s ranking algorithm (e.g., views might be weighted more heavily than keywords or vice versa).
6. The system ranks the songs from highest to lowest based on their final scores.
7. The **administrator** or **user** views the ranked list of songs, which is displayed on the platform's interface. The list includes:
   1. Song title.
   2. Artist name.
   3. Number of views.
   4. Keyword relevance score or exoplanet-related tag (e.g., "Most Exoplanet-Themed").
8. The system periodically updates the ranking based on new views and keyword detections as songs are added or lyrics change.

#### **Exceptions:**

* If a song contains no relevant exoplanet keywords, the system assigns it a low or zero keyword relevance score, but it may still rank higher if it has a large number of views.
* If lyrics are missing or not available, the system can only rank the song based on views.

**Exoplanet information**



*Ilustración 4 Exoplanet information*

### **Search for Exoplanets**

### **Use Case Name**: Search for Exoplanets

* **Primary Actor**: Registered Member
* **Description**: A registered member of the platform can perform advanced searches for exoplanets using specific filters and criteria.

#### **Main Flow:**

1. The member logs into the system using their credentials.
2. The member selects the "Search Exoplanets" option on the main interface.
3. The system presents a series of filters, such as:
   1. Host star type (e.g., red dwarf, G-type).
   2. Exoplanet size (similar to Jupiter, Earth, etc.).
   3. Distance from Earth (in light-years).
   4. Detection method (transit, radial velocity, etc.).
   5. Habitability potential.
4. The member enters the desired values for the filters.
5. The system processes the request and displays a list of exoplanets that match the search criteria.
6. The member can select a specific exoplanet to view more details, such as its orbit, atmospheric composition, and observation history.
7. The member can save the search results or generate a report in compatible formats (PDF, CSV, etc.).

#### **Exceptions:**

* If the member enters incorrect credentials, the system shows a login error message.
* If no exoplanets match the search criteria, the system displays a message stating "No results found."

### **Consult Exoplanet Information**

### **Use Case Name**: Consult Exoplanet Information

* **Primary Actor**: All actor
* **Description**: A registered user accesses the platform to consult the exoplanet database without needing to perform advanced searches.

#### **Main Flow:**

1. The user accesses the exoplanet information platform.
2. The system presents a basic menu with general information on exoplanets, such as:
   1. List of the most recently discovered exoplanets.
   2. Featured exoplanets (potentially habitable).
   3. General statistics (total number of exoplanets discovered, by detection method, etc.).
3. The user selects a specific exoplanet from the list to view its detailed information.
4. The system displays a page with the basic data of the exoplanet, including:
   1. Name.
   2. Distance from Earth.
   3. Host star.
   4. Temperature.
   5. Discovery method.
5. The user can explore more information but cannot generate reports or perform advanced searches since they are not registered.

#### **Exceptions:**

* If the user cannot find a specific exoplanet on the basic list, they can use a simple search bar to look up by name.

### **Log Activity for Exoplanet Information Consultation**

**Use Case Name**: Log Activity for Exoplanet Information Consultation

* **Primary Actor**: System
* **Supporting Actor**: Registered User (or any user consulting information)
* **Description**: The system automatically logs user activity a registered user consults exoplanet information on the platform.

#### **Main Flow:**

1. The **registered user** accesses the platform and navigates to the exoplanet information section.
2. The user selects an exoplanet to view detailed information.
3. The **system** captures the following activity data:
   1. User's IP address or anonymized session ID.
   2. Time and date of the consultation.
   3. Name of the exoplanet viewed.
   4. Pages or sections accessed (e.g., orbit details, discovery method).
   5. Duration of the session (if applicable).
4. The system stores this information in the activity log database.
5. If the user consults more exoplanets, the system logs each consultation separately.
6. Logged data is used for analytics, system optimization, and possibly for notifying administrators of unusual activity patterns.

#### **Exceptions:**

* If the system fails to log the activity due to an error, it retries automatically. If the retry fails, the system generates an error report for review by administrators.