BROAD ABSTRACT OF THE DISSERTATION IN MEEC, 2°SEMESTER, 2016/2017, TIAGO FERNANDES

ISTEvents - Disclosure system for events

Tiago Fernandes, Student, IST

Abstract—The increasing use of information and communication technologies currently allows us to use a wide range of means to obtain various types of information, as for example through the website of an organization, e-mail, electronic information boards, social networks and displays, among others.

This type of information is mostly available online, but typically spreads throughout numerous sites and platforms. The indication for the dates is unclear and not related to the type of user that queries. As an example there’s the case of Instituto Superior Técnico, which offers many times information about events that we’d like to have seen, but which have already taken place, or events that we know are happening at the moment, but we don’t know what they are about. There are users that are notified by e-mail, for example, with events that should not deliberately be targeted to them, making it implicit the targeting criteria information, which sometimes is not available for online consultation.

And in this context, there is a need to design, develop and implement a platform that easily allows a user of an organization to submit events. This work is applied specifically to the case of Instituto Superior Técnico.

Index Terms—Events, Calendar, RSS, ICAL, REST, Information System.

I. INTRODUCTION

This dissertation begins with a study of the approach used in the current system by the institution to manage events. The entities that organize events are identified, as is its target audience and the current state of the means of distribution. Also elaborated is an analysis of several online platforms, and in the same context the usability of such platforms is referenced, its adherence by the public, its available services, and problems found.

The functionalities that should be taken into account while developing the project are also presented through a questionnaire published online to better understand the interests and requirements of the users. This study culminates with the development of the ISTEvents platform. The objectives of this dissertation are validated through a presentation with future users, followed by questions about some aspects and their proposed improvements.

November, 2017

II. MOTIVATION

An event is something that can be public or private, happens in a specific place at a specific date and time. It is defined by, and is associated to, a planner that gives it a name, description, a start and end dates.

The information about events in organizations, about diversified subjects in different fields, is commonly spread throughout multiple unrelated means that users must access in order to obtain or publish it. It can be sent by email, posted on a social network, in the organization’s website, and others, thereby dispersing it, resulting in no structured guidelines the user can follow to submit events. A dedicated on-line platform for the submission of events is more complex than it may seem.

It is extremely important, in academia, that an event is well targeted and that it maintains a given consistency, without overlooking the fact that it is a question about learning, constant flow of information and knowledge. It is for example through the hosting of conferences, seminars or symposiums that investigators have the possibility to disseminate the work they develop.

The aim is to develop a system based on the WEB\(^1\) that allows the user to manage, advertise and use information about events organized in the context of IST\(^2\).

Its implementation should include ease of use, be efficient, and also allow the user to register several events with some degree of customization. Thus you can define different groups of recipients, previously loaded onto the platform, not exclusively dedicated to types of target audiences, but also to whom the publication of the event is actually intended for, and where it can be exported to.

III. CURRENT SITUATION AND PROPOSITION

A. Means used by the Institution

Nowadays the production of and access to information is accomplished by a variety of means, mainly electronic. However, this accomplishment has been based on strong technological developments, such as in communication networks, in the several tools and programming languages, as well as the devices or terminals used in the production and visualization of information.

![Means of Disclosure](image)

Figure 1: Simplified structure of the current state of the electronic media.

The announcement of events is spread out through several places with imprecise information, there is no dedicated platform and, if it exists, it is limited. The event sharing and consultation is neither simple nor easy to do for the IST community, where in order to know about an event you have

---

2. Instituto Superior Técnico
to search in several places. It so happens that users end up receiving, for instance, via email, information that is not of much interest to them because they are not part of the target audience of an event. Several users seldom check the IST institutional e-mail and therefore end up not being informed about events that they would be interested in.

B. Solution

The proposed solution is the development of a centralized platform, ISTEvents, figure 2, where it is possible to create and manage events in a simple and fast way. The fact that the object of the study, the IST organization, is very extensive in terms of volume and variety of events, makes it an excellent candidate for a proof of concept.

By taking advantage of several technologies available today, this project aims to create a tool that is able to bring together in a single site information about events and all the needed details. This in turn facilitates their search and allows users to find events of interest, providing them access to a centralized platform with all the relevant information without having to multiply their search efforts through several websites and other different means of distribution, figure 1. The platform consists of:

1) A web platform where, besides submitting and managing an event, the planner can direct it to a target audience.
2) The possibility of exporting the event to another platform, as, for instance, the website of the organization to an information panel.

The target user of the event is able to, on a single site, keep up with all events, filtered by location, date of completion, and more, with accurate information.

This way, the user will have access to information about various types of events (Lectures, Courses, Conferences, etc.), which are or will be carried out at a particular place. The platform also integrates features such as iCal and RSS to export the information elsewhere.

The platform has advanced search options, which means that, in addition to the typical features, it allows the use of preferences to filter the results of the surveys in accordance with the user’s wishes. Preferences can be based on a particular type of event (e.g., Conferences). Users can include parameters to configure the interval of dates of the event, but also venue, target audience, among others.

The platform is properly functional and is expected to have an appealing level of usability.

IV. Study of the IST event system

In this chapter, a description is given of some types of events typically encountered in IST. The goal is to understand what minimum information requirements an event publication should contain.

1) Conferences: Conferences are meetings during which various personalities treat matters of common interest to their participants. These events promote interaction among participants, leading them to discuss issues and interact during the event in a variety of ways.

2) Courses: The courses consist of the detail of a certain subject or set of subjects with the purpose of ‘training’ or ‘teaching to do’. It is composed of presentations by people, usually with academic backgrounds, who try to pass their knowledge to the participants.

3) Festivals: A festival is a more elaborate event that requires greater planning, being linked to a particular subject. They should include a varied schedule in which established figures and new talents alike participate, to attract the widest possible audience.

4) Theses: A thesis event is a subject, theme or objective, which presents itself and is defended by someone based on certain hypotheses or assumptions.

5) Other Events: With these various general scenarios of different types of events typically seen at IST, as well as presentations, seminars, workshops, it is possible to realize that they all can be disclosed in the same way.

As such, analyzing the similarities of each type of event, it becomes evident that each disclosure contains: - A title; - An image; - A description and/or program; - A location and time; - Contact information.

A. Event recipients

Event recipients can be directly or indirectly informed, depending on where the event was produced. Directly means when a user receives in his mailbox an informative email regarding a given event, or when it is exhibited in displays or electronic panels in the entrances of buildings. Indirectly is when events are published on online platforms.

All members of the organization are the recipients of events, whether they are teaching or non-teaching staff, students, and outsiders. It does not mean that the events are actually targeted to their intended audience.

B. Current state of event production systems

The event production system is not standardized for all of the school’s departments, with each private group using the CMS application provided by the Fenix system, and the public groups make use of CMS applications such as Wordpress and Drupal.

1) CMS of Fenix: Using the CMS of Fenix, it is necessary that previously created categories exist. The creation of these categories have associated to them a desired template, where for the effect of the page of events can be chosen the template events. After having this category created, the user has at his

3Content Management System
disposal the article submission, which has the following steps shown below:

- Choose the name, which will be the title.
- Write the content, and you can insert an image.
- Select whether you want the article to be visible.
- Choose who can view the article.
- Choose the date from which the article is visible and when it is no longer present.
- Select the category where the article is inserted.

The content can be written in Portuguese and English, or in just one of the languages.

2) CMS from another supplier: The customization is up to those responsible for a given platform, and can by applied according to the needs of the organization. In the example of wanting to have a multilingual site, one could make use of WordPress’ qTranslate-X plugin, where not only can submitters write the article in the various available languages, but also the whole platform will be suitable for consultation in translated form. The steps for submitting an article, in its default version, are not very different from the CMS of Fénix mentioned before. For a given user to submit an article, they have to go through the following steps:

- Choose the title.
- Write the content, and insert image or video.
- Select whether they want the article to be visible.
- Choose who can view the article.
- Choose the date of publication.
- Select the category where the article is inserted.
- Insert tags.

In the case of Drupal, the process is similar in that it makes use of modules that can be installed, or the user himself can develop them.

C. Disclosure of Events

The disclosure of events is done by various means, after authorization from the body responsible for approving this medium used. Next, these means are approached in order to analyze the usability and its functionalities.

1) IST website: The GCRP\(^4\) is responsible for the management of the content published on the IST page banner [2]. At the request of this body to the NME\(^5\), responsible for the development of content, the necessary contents are produced.

There is no way to search by type, subject or by date. The only information available is a title, description and sometimes a link to redirect to the page dedicated to the event or online platform of the promoting organization. A form for submission of events and news is available, although not functional.

2) Fénix Platform: In the Fénix platform page [3], it is possible to have a list of news, but not events. These are correlated with the IST web page, although at the functionality level, such as the RSS subscription case, here there is no option. However, if the user, for example, adds a favorite (only available referring to subjects), he can no longer see news of the organization in the listing, being restricted to only the information regarding the favorites of subjects. There is no calendar that can be customized.

3) Newsletter: The newsletter that is sent by e-mail and is accessible online [4], contains some, but not all, of the events that can be found on the IST page.

The information for each event is only: the date and title (in Portuguese and English). The titles are links that redirect to the IST page in the corresponding language, or another one, with a description of the event. Redirects sometimes are not correct, and you are redirected to a blank page.

4) Social network: Social networks, despite having a large audience, are not really a platform for institutional purposes. On the Facebook page [5], we can find all kinds of news and events that are frequently updated. However the search for an event of interest, is not intuitive, having the user to view all publications.

5) E-mail: Many of the events advertised by IST by e-mail are not posted on the organization’s online page or on another publicly available platform. There is in this way a target audience who ends up not being informed of an event, since they may not read the institutional email frequently and only consult pages of supposed disclosure.

6) Electronic Displays: In the entrances to the campus buildings, there are usually electronic displays that are connected to a minicomputer, which pass on relevant information in slideshow mode. But events are not given priority, and when they exist, they do not follow certain information patterns. For example, display in order of title, description, date, time and location.

D. Conclusion of the analysis of the means of dissemination of IST

Given the means of communication used by IST, there is no relationship between them. That is, in order to publicize an event, it is necessary that the promoter uses the various means of publicity intended and publishes it repeatedly.

By the difficulty of the task itself, the events either are not available at the same time or end up published only by a single medium. If there was a centralized mechanism, through which the promoter would choose where his event would be available, he would have only to promote it once. On the other hand, the target audience would not be obliged to consult the various media, simply accessing a single online page with a listing of all events. On this page, you can list events of your interest, filtering by data such as type, category or date.

V. RELATED WORK

Some of the websites that promote events were selected for the analysis of their operation and usefulness, as well as the functions available. However, the service that is intended to be developed for the platform in question is something that is not yet explored.

The observations made on each page, on three internet pages, do not aim at criticism, but rather to identify strengths, and their functionalities.

\(^4\)Office of Communication and Public Relations
\(^5\)Multimedia and e-Learning Core
A. Stanford University events page

The Stanford Event Calendar[6] is a central university service for information about an event. It provides a detailed list of campus events including lectures, conferences, theaters, exhibitions, activities and more.

Accessing the page, by default there are highlighted events, but these can be found by date, category (type or subject) and organization, and can be forwarded or imported to the user’s personal calendar. To find the events on a date, just use the available calendar. For categories and organization, it is necessary to select the desired option in the menu, by type, subject or organization. All events are available through XML Feeds [7] as well as iCal [8] and RSS feeds [9].

If the user belongs to a department, organization, or student group, they can request a platform access account, where they can add or edit events. Approval by an administrator follows certain requirements, and is not considered to encompass outside companies or organizations that do not qualify as Stanford sponsors.

When the user selects a desired event, they are forwarded to a page with proper detail about it. This is composed by the title of the event, an image, day and time, place of accomplishment where they have associated a map of the campus, sponsors, description, admission, labels, audience, contact and in some they also have a link for more information. It can also be shared via Facebook or Twitter, added to a calendar or sent by email.

As to the audience, i.e. the target audience, these are: general public, teachers/staff, students, alumni/friends, and members.

B. Viva Agenda

The Viva Agenda page [10] allows you to insert events from different areas, having a wide variety of categories available, among them art, concert, children, culture, education, exhibition, music, theater, and workshop. It allows to register on the page, including with Facebook login integration [15]. This platform also has geolocation [11] [12] [13] of the user, which shows all the events belonging to the city detected in the main highlight. In terms of structure, the layout of the page is simple and appealing, which makes navigation easy and intuitive.

C. Eventbrite

Present in twenty-one countries, the page of Eventbrite [16], is a very complete platform that even allows the customization of the page of the event itself. It shows all the popular events, belonging to the country and city that is detected automatically by geolocation of the user who is accessing the page. They can be shared via Facebook, Twitter, LinkedIn, and email. If the user is registered, they can save them as favorites which appear in the main highlight when the page is visited (after login).

In relation to the options found for the creation of the event, these are subdivided in three stages:

1) Event Details - It must contain a title, location that can be physical space (address) or simply online, date and time of beginning and end (can be several), an image, description, name and description of the organizer where you can include links to Facebook or Twitter.

2) Create tickets - if this option is needed, the type of tickets that can be free, paid or donated are chosen. There is also the possibility of elaborating in a very precise and detailed way a map of the space, to reserve places.

3) Additional settings - Private or public can be selected, the type and topic of the event as well, and whether or not the number of tickets available on the registration page is displayed.

VI. ISTEEvents

In this chapter, a quiz analysis will be made to understand the interests and requirements of users for this type of platforms. It will present the architecture and methodologies to use in ISTEEvents, as well as the requirements and functionalities to be implemented during its development.

A. Quiz

After the analysis of platforms and fundamental requirements survey, an online questionnaire was made available through e-mail and social networks.

The quiz was intended for all people directly or indirectly linked to the Instituto Superior Técnico - Universidade de Lisboa, with distinction of the type of participant and age, and with an estimated time for completion of 5 minutes.

Of the 42 participants, the respondents who stood out the most were the students, employees and people without connection to the Institution. The latter, with a total of 9 participations, are considered as external persons who are also important for the survey, in order to guarantee a more general context at the application level, with the difference that only a section was not presented, on the state systems adopted by the Institution. The age range is, for the most part, comprised between 18 and 33 years.

People connected to the Institution but not interested in viewing or being informed about events, were referred to the final section regarding the proposed platform.

Of the results obtained, with regard to interests, it is to be noted that almost half of the respondents usually organize or promote events. By crossing this information by respondents who have expressed an interest in the consultation, or by being notified about the holding of events, it can be determined that, in general, all people are interested in events. The difference is based on the fact that, either they are event organizers, or participants in events.

About 55,05% of respondents use synchronized calendars. It will be an aspect to take into account in the development of the platform, through the use of feeds. They should always be available, either in the event listing when the user accesses the platform, as in each event. The difference will be in the available options, where in the case of the visualization of an event, the creation of a QR Code [20] can be developed,
allowing the user to automatically add the event to their calendar in the smartphone.

Regarding the section on the current state of the disclosure of events by the Institution, it intends to obtain the opinion of the users about the way the information is currently disseminated. The most used means of communication, through which the community connected to the Institution gains most awareness of the events, are the consultation of institutional e-mails, social networks, such as the official Facebook page, and word-of-mouth.

A point to keep in mind is the low disclosure rate through calendar synchronization due to the lack of consistent exporting of data of interest to the user, which leads them to refrain from opinion or to consider an irrelevant route. Considering the percentage of users, who claim to use calendar synchronization, it is denoted that there is a communication route not properly exploited and made available to the public.

The most important means of communication, according to the opinion of the respondents, are the events promoted via online platform, social networks and word-of-mouth. The most disregarded on is email, so there is a need for a possible integration with mailing lists, so that the users with an interest in a certain group of events can be notified via e-mail.

In order to understand, in a more concise way, and to validate the context of this dissertation, five statements were elaborated, pointing out that the current systems used to promote events are ineffective. It can also be concluded that:

- There are events that, in fact, go unnoticed;
- Possible target audiences do not receive information;
- Access to an event of interest to the user is not feasible;
- The information is disseminated.

In the last section of the quiz, the respondents were proposed to evaluate by degree of importance a set of requirements assuming the role of three types of users:

- View events - users with and without authentication;
- Insert events - authenticated and associated with groups;
- Manage events - manage the user group and events.

This way, it was possible to define the main functionalities to be taken into account. Analyzing the first user profile, which consults the information, the essential points are the filtering of events, and the always present displaying of a schedule and the date/time of the event. With less relevance, is the synchronization of events with personal calendar and the ability to import them into external platforms.

For the user profile which inserts events, the most important points are the preview of how the event will be after the publication, possibility to save the event to continue its editing later, to visualize all their submitted events and the possibility of promoting the event to a specific target audience.

Users with administration privileges are associated with a given group, and control all users that correspond to them, as well as authorize and review all submitted events. The features that are most relevant and to be taken into account are the possibility of being able to edit a given event submitted by a user with submission permissions in the group they manage. These will only be public after their approval. The option to view a list of events waiting for approval should also be present. In this type of user profile, the opinion of people outside the institution indicates it is most important that there is the possibility to add rooks to the information, and that it can be sent for review to its author.

Since there is no relevance at the interface level of the description field, when creating an event, we will opt for not providing visual formatting, without possibility of changing color or format. This way, consistency of presentation will be guaranteed, being uniform and visually more pleasant in event listings, or the event pages themselves.

A multilingual platform will also be developed with the possibility of exporting and sharing its event information. When entering the event, the required Portuguese and English language fields are:

- Event description - title and description;
- Biographies - affiliation and biographical description.

B. Data model

Figure 3 shows the relationship of the various entities belonging to the event, and the information requirements that the publication should contain are:

- Title - this information is mandatory, and should be relevant in accordance with the purpose of the event;
- Description - must transmit the identity and the purpose of the event. Have an intonation, aimed at the target audience, as it arouses interest and shows what they can expect from the event;
- Image - will be mandatory. If the user does not have any, he can choose an image of the database that relates to his event;
- Date and Time - multiple hours and dates can be entered according to the need of the event program;
- Location - it is essential to know the exact location of the event, where a map is always associated;
- Categories - can be theme(s) or type(s);
- Target audience - is the user community which the information is intended for. To characterize the different publics, several standards are used: students, former students, teaching or non-teaching staff, members, etc.;
- Contact - will not be mandatory, will have the option to show the contact information of the promoter;
- More information - the promoter can add a link to more information about the event;
- Biography - in an event where information is needed, for example, by speakers.

Figure 3: ER model of the event.
C. Architecture

The platform will have a central database that will support the service, sized by an ER\textsuperscript{7} model to be developed. A relational database is made up of entities, also called tables, and relationships. A table is a structure made up of rows (tuples) and columns (attributes), where data is stored. Each row formed by a set of attributes represents a record within the database. It is not mandatory for a record to have data in all the attributes (columns), that is, there may be attributes with a null value. The number of tables in a database is limited only by the DBMS\textsuperscript{8}. The language to be used in the definition and manipulation of relational database data will be the structured query language, SQL\textsuperscript{9} [21] [22].

VII. IMPLEMENTATION

There are two distinct areas: private, being the back office for creating and managing events, and public, being the front office for viewing the listing by users (recipients of events).

A. Web platform

When accessing the ISTEvents platform [14], the home page, figure 4, is displayed with the events of the day and future events. On the left side of the page there is a calendar where you can select a day from which to list the events.

![Figure 4: ISTEvents Platform Home.](attachment:image)

1) Event feed: The event listing and the event page itself always have a menu with feed options available on the right, figure 5, where the following formats can be used:

- RSS Feed, iCalendar and JSON data: list in the corresponding format all the events that are currently being viewed on the page, in the language and filters that are active;
- Google Calendar: same as the other options, being automatically added to the Google calendar;
- QR Code: in the case of the event page it is possible to generate a QR code that contains its information.

The feed formats used in the platform have been developed using PHP\textsuperscript{10} and are in their own *.php files that are called by a file (events_feed.php) responsible for determining the operations to be performed on a given feed request. In order for this customization to be possible, it is necessary that it be declared in the file functions.php of the theme and the default used by the CMS of Wordpress be removed.

For the QR Code functionality, a class was created that generates the QR with metadata suitable for smartphones, with the name qrcode, making use of the Google Charts API [23] to request the image to generate according to certain parameters that are passed to it (title, all day or not, start and end date, location and description).

![Figure 5: Event feed.](attachment:image)

B. Features in relation to user profiles

The sidebar offers a set of features to users with their profiles and the following always inherits the features of the previous ones:

- Not Authenticated: Consult event;
- Authenticated: sets their event preferences;
- Authenticated - Group member: inserts events;
- Authenticated - Group manager: corrects and approves events, adds types and themes, adds users to the groups in which it is a manager;
- Authenticated - Administrator: administers and has access to the entire platform, including the Wordpress backoffice.

1) Not authenticated:

- Access to the calendar: the user has a calendar where he can consult events by a specific date desired;
- Filters - Today’s events: event list of the date from which users are accessing; - Future events: list of events of the access date and later; - Type: list of events identified with a given event type (eg Ceremonies, Conferences, Seminars, etc.); - Topic: list of events identified with a given event theme (eg Engineering, International, Science, etc.); - Audience: list of events targeted to a specific audience (eg teachers, students, alumni, etc.);
- Organization: presents by groups of organs of the Institution the sub filter entities; - Entities: correlated in group with the organization are presented entities such as, for example, the user selects 'Academic Units' and then selects 'Department of Electrical and Computer Engineering';

2) Authenticated:

- Settings - My Profile: photo, name, course to which he belongs or organ in the case of teacher or employee,
groups of which is a member or manager, are some of the information that the user can consult. You can still apply to belong to a group of users. - Feeds: customization of personalized feeds to the interests of the user. - Preferences: Manage types, themes, and audience type of events in which the user is interested in being alerted whenever viewing an event or list of events of their interest in the ‘My calendar’ option.

3) Authenticated - Group member:
- **Organization** - Manager group: list users who belong to their groups; - Group of Entities: list entities belonging to the Institution; - Entities and Organs: lists names of organs correlated with entities;
- **Events** - Create new: users can create an event and submit to the corresponding group. Subsequently the person in charge of the same group will have to approve; - My events: list of events submitted by the user;

4) Authenticated - Group Manager:
- **Organization** - Managers group: add or remove users from one of their groups, and control the profile associated with the user (member or manager);
- **Events** - Administer Events: list of events for approval; - Type of events: add an event type or fix an existing one; - Event themes: add an event theme or fix an existing theme;

5) Authenticated - Admin:
- **Organization** - Group of Entities: add or remove entities; - Entities and Organs: create or remove organs and associate it with the corresponding entity;
- **Events** - Recipients: Create or Remove Recipients Type;

C. Manage group of managers, entities and bodies

Users with a group leader profile can manage users in groups to which they are associated, where for this purpose the valid options that are shown to them, will be their group(s). In the profile to be assigned to the user can be selected as manager also the group or member of the group in which only can submit events that will be approved later by those responsible for the group to which it is associated.

On the contrary, the user with an administrator profile can manage users in any group (Institution’s bodies). The results are loaded by an **ajax** request, made to the `entity.php` file responsible for returning the result, with the bodies corresponding to what is being written in the input and their association grouped by the entities that correspond to them. The presentation of results is developed in conjunction with the use of the script Select2 [24]. For the personalization of the selection box of results.

The administrator may also manage entities, as well as the organs of the Institution. In case of creation or editing of a body, the administrator must write the name in Portuguese, English and select or search for the entity to associate it. Entities totaling eighteen are preloaded into the check box.

D. Manage event types, themes, and recipients

The management of types, themes and recipients of events is done through a panel, for managing themes. Users with the profile of group leaders can add new ones, always inserting the name in both Portuguese and English, and can only remove them if no event has already associated a given theme created. The administrator can still manage event recipients.

E. Create Event

All users, authenticated and belonging to a group, managers or members, as well as the platform administrator, can insert events. The user must insert a set of data, table I, whether or not it is mandatory and having the possibility to add more than one of the same information.

<table>
<thead>
<tr>
<th>Event image</th>
<th>Mandatory</th>
<th>Possible to add more than one</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>YES</td>
<td>NO</td>
</tr>
<tr>
<td>Event image</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Table I: Information to insert when creating an event.**

It is always possible to switch the language of the title and description fields, where it must be inserted in Portuguese and English, figure 6. When selecting the language, the fields automatically change to the corresponding one in the same window keeping the same appearance. There is also a feature developed for simultaneous editing so that it is more convenient and efficient to change, correct, and translate as both languages are displayed in a window that occupies the entire screen.

![Figure 6: Start of the event information input panel.](image)

1) **Location Editing:** The event may have an associated internal or external location to the Institution, where by default the internal location is displayed.

Integration with the Fénix API was developed to be able to make requests with the endpoints of the spaces, through three steps shown in figure 7. In its development, `events - location.php` file that responds to the **ajax** calls of the control functions developed for the steps required, there was concern to filter the spaces that are returned. These always identified with the ROOM type, makes it impossible to exclude
everything that is for example corridors, toilets, cafeteria, kitchen, etc. There is thus an array where some names of these spaces are declared that must be discarded in the construction of the options to be presented in step three.

Each user choice, be it Campus, building or space, is always associated with an endpoint that is recorded when you save or submit the event. The endpoint to be registered does not have to be space-related (step 3), for example, if the user chose 'Alameda' on the Campus and did not perform the following two steps, the endpoint for saved it is the Campus.

2) Editing Biographies: In case an event requires it, it is possible for the user to add one or more biographies. This requires an image, name, affiliation and biographical description of the person. Affiliation and description work in the same way as the title and description of the event, explained previously in point VII-E. The option to show the person’s contact and/or personal page can also be activated.

F. Event list and administration

The list of events submitted by the user, figure 9, as well as events waiting for approval by the group’s managers, work and are of the same type. The difference is the status presented in each event and available options.

When the user queries the events, the possible status that will be presented are, depending on the associated profile:

- **Member**
  - **Editing** - when the user only saved the event;
  - **Under review** - the event awaits approval, after submitting it;
  - **Published** - the event was approved by the manager;

- **Manager or Admin**
  - **Editing** - when the user only saved the event;
  - **Published** - the event is automatically approved;

In the event management panel, the manager can directly accept that the event is publicly available, edit or delete, and the status are:

- **Waiting for approval** - when the user of the group has submitted an event;
- **Approved** - when the person in charge of the group accepted the event;

G. View event

When visualizing a given event, its title, image, date, time or all day, description and sections are always present. These sections refer to the location that is always present in all events. If there is a contact or external link, a section of more information is presented, as well as the biographies associated with the event. The panel shown on the right contains essentially:

- **Sharing** - the user can share the event directly to social networks, like Facebook, Twitter or LinkedIn. They can also get the feed of the event to, for example, add it to their personal calendar;
• Event Type(s) - event type(s) in which it fits;
• Event Theme(s) - theme(s) in which the event is inserted;
• Event Recipient(s) - recipient(s) associated with the event;
• Future Events - upcoming events from the date the user is accessing;
• Most viewed events or events of interest to the user - if the user is not logged in to the platform, events that will happen most often are displayed. Otherwise, user interest events will be suggested;

The user can click a type, theme, or recipient to view a list of events that belong to that selection. The user can also directly view a suggested event by simply selecting it.

The venue is always demonstrated through a map, with a description of the address and four informative options on how to get there, whether by car, on foot, by public transport or by bicycle. In the case of an event that takes place on the premises of one of the Institution’s campus, it is possible to accurately map the location. The option to display the campus map as well as detailed campus, building and space information is displayed. This information is received through a request with the endpoint registered in the event information, to the Fénix API. The following sections, shown if they exist and are associated with the event, are the sections of more information and biographies.

VIII. VALIDATION OF OBJECTIVES

In order to test the simplicity of the platform proposed in this dissertation and its consistency, it was tested and demonstrated to a group of potential users, in order to determine the positive aspects and those that can be improved, both at the front end and back end level.

The time of demonstration and discussion of the functionalities was on average one hour for each participant, in a total of eight. In the end, they would have to answer a short questionnaire with three questions. The receptivity and interest in the demonstration of the platform was very satisfactory and clearly useful in validating the objectives and context of this dissertation. There was a good understanding, as well as suggestions from the participants of new features.

In the first question, it was required that the participant indicates the level of usability of the platform, in a value between one and ten, where one is not good and ten very good. Six participants attributed the value ten, and two attributed nine.

In the second question, all participants, without exception, indicated that the platform will improve the disclosure and detail of events, promoted by the organs of the Institution. Regarding features, or the platform as a whole, the following caught the attention of the user, or some functionality they would like to see implemented:

• Highlights - Demonstrated functionalities of great utility and efficiency for the universe of the institute; - Platform very well achieved and corresponds fully to the expected; - Possibility of immediate publication; - Add biographies; - ser preferences, whether in the type of events, themes, and types of recipients, or in the organization that is delivering the event; - Location and possibility of outsiders getting the precise directions to the venue; - Usability; - Attach links for more information;
• Proposals - Import data from previous biographies, if same person; - Event alerts service, where the user in a given event says he wants to be notified on a given day and time; - High efficiency, efficiency and economic project for application to the universe of the University of Lisbon; - As a member, you can leave a note when submitting for review to the person in charge of the group, for example, that the submission be done on a given day. Responsible only accept event after viewing note; - If time is left blank, that is, the option ‘all day’ is not selected, in the event there is only indication of not defined; - Publication by days: if user chooses to add another date and time field, there is the possibility of giving a different title and small description. Use case, poster of events that takes place during a week; - In the User Biography, attach a file; - Click the number of views for a given event and a chart with a number of daily clicks.

IX. CONCLUSION

The purpose of this dissertation is to contribute, in a sustained manner, to a robust event dissemination platform, capable of meeting the maximum requirements, both by analyzing the platforms within the same context and the needs of the surveyed users. This way, the problem of the diffusion of information, which is recurrent in the Institution, was solved.

The development and availability of a range of functionalities was achieved, seeking to respond to a real need, through a platform that brings together all this information. This solution was immediately praised by all users who organize or consult events on a daily basis.

Pointed as of extreme relevance, a system that allows users to submit and consult events was implemented, never before seen by them. The availability of this service to the institutional community offers total autonomy to the school organs themselves, to publish their events in a timely manner.

The state of the art was analyzed, aiming to understand and frame all the work that was developed in this dissertation. After analyzing the requirements, both the analysis of the applications within the same context and the survey carried out, the best way to implement this platform was structured.

At the moment, the platform is available [14] to any user, not officially in production, being able to guarantee a good usability.

During implementation, the project goal became more complex than initially expected. There is no denying the commitment, effort and dedication in the development of this project that, fundamentally, can demonstrate the pertinence of what should be a platform of events to be adopted by an Institution. There was a constant concern to make the system compatible with several browsers and a responsive web design work.

The development process, from its elaboration to its final result, was positive, with a gain in learning and reinforcement in web technologies and automated configuration tools.
It required a readjustment, in the time delimited, for each functionality and what each functionality should solve. These adjustments caused a considerable deviation from the initially proposed functionalities, which were inevitable, as was the case with the restructuring of the workflow of the platform developments and the deployment itself in the production servers that were used by the Institution.

With the natural maturity that a project like this one can achieve in time, it is expected that, in a first phase, it does not fully meet the needs of users, who will make use of this platform daily. However, a survey was carried out to validate the objectives for which this dissertation was proposed. After explaining all the features to potential users, feedback and expected results were extremely satisfactory.

A. Future work

During the execution of the project, with the normal difficulties of such a process, the ideas of altering and improving in its course are inevitable, but the time for execution and all the work necessary for its elaboration leaves no room for certain developments that would have been nice additions to see implemented. The implementation of functionalities and integration with several external applications should be continued, as shown in 10.

In the case of elasticsearch [19], it will be used to be possible to have a quick and scalable search, due to using inverted index (uses LUCENE library [18]) tokens all the text used in the application. It scales horizontally with the introduction of more nodes to the elasticsearch cluster, that is, the external application that communicates with the event platform and keeps almost everything in memory, since it works as a kind of cache. Possibly, it will also be used to perform GET from RSS & iCal Feeds.

Sending SMS alerts, or other notifications, even during events, can be an asset. In an event where participants, like the general public, want to be notified of them, or follow certain results in real time and share it on social networks. For example, in a multi-team technology challenge event, it will be possible for the public to know where the teams are by their associated identifier, where, in the course of the challenges, position information is recorded and updated. There may also be an option when viewing an event, where the user sends a reminder, leaving their contact number and marking the day and time they want to be notified.

Integration with the Group Server to be able to automatically map the entire structure of the Institution, as well as accurate user information. Thus, when the user authenticates, it will be possible to show and pre-define a set of configurations, such as a personalization of events of interest to them.

Another feature, although at the moment it is possible through feeds, for example, the use in json format of a given list of events, is the integration with Digital Signage. This way it will be possible for building administrators to redirect events to the screens that are posted on its entrances.

REFERENCES