

# MySportsFace

Marcos Germano  
marcos.germano@tecnico.ulisboa.pt

Instituto Superior Técnico, Lisboa, Portugal

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## Abstract

The usage of the Internet and the influence of social media have increased over the past few years and various new social networks have arisen, like Facebook and Google+. However, in the sports world, organizations are the main hub of information distribution and often only provide content related to the sports they promote. Recently, some companies and indie developers have created applications and websites to deal with the problem of non-centralized information, but it is still not enough as these sites only offer information for specific types of sports and have limited usage besides social media information. Therefore, this work focuses on the creation of an application which merges the concept of a social network with the concept of a sports social media hub, so that its users may interact and publish content, as well as search for information on various sports and organizations. The application allows users to have an editable profile and to send messages to their followers, while also containing a custom event menu that lets users create their own content and share it with everyone else. Other users may sign up for these events and then share videos and images on the event pages. As part of the development of this application, several integration, usability and satisfaction tests were carried out to guarantee that the application was fully functional and provided a great user experience. During the testing phase, users reacted positively after experimenting with the application and gave out various suggestions on how to further improve the application and to increase the number of features.

**Keywords:** social networks, sports, sports organizations, multimedia, information

## 1. Introduction

In today's fast-paced world, and with the ever-growing access to the Internet and digital tools, a great deal of people spend a lot of time on social networks for the sake of either publishing content or just socializing. In fact, social networking services such as Facebook or Twitter have now been available for years to anyone who wishes to establish virtual relationships and share any kind of content, including sports.

Currently, the world of sports attracts quite a wide span of supporters who are eager to be able to browse for news on their favorite sport, sign up for events or even create new events themselves.

However, while it is easy for a sport fan to access information online on their favorite organizations, for example, to read news articles, other tasks may require additional external applications, such as creating an event or uploading videos and images, among others.

In fact, in what regards the tasks available to users, the websites of sports organizations are not altogether alike — while some allow their supporters to apply and pay their fees online, others only display the results of events and publish sports

news. Besides, not many provide users with the opportunity to create their own events, post their own content, or even follow other users and form relationships, not to mention other possibilities. What is more, some of the websites are not quite user-friendly for beginners.

To address these issues, a new web application was designed combining all the aforementioned services, to serve as a social hub by containing user relationships, their profiles and favorite sports, as well as the content of multiple sports organizations. By adding these concepts together, not only can users find information but also leave their remarks on any type of content, both in the form of comments and wall/mood updates or even votes/ratings.

In order to provide users with information, this web application will use the RSS (Really Simple Syndication) feeds from existing organizations, turning each entry into real database objects. Also, the application allows users to create their own sports events and competitions through the use of an event feature imbued into the social network part of the application. Likewise, users are able to upload videos and images by themselves, as well as post comments, follow other users and write com-

ments on events and articles.

All things considered, the objectives of this work and the web application itself are as follows:

- Provide users with a social networking experience involving the area of sports;
- Give users access to a great amount of information displayed online by various sports organizations worldwide;
- Allow users to create their own customized sports events;
- Allow users to post and share several types of content about sports, such as comments, videos and images;
- Allow users to provide feedback through the use of the "star" voting/rating system.

Along with the development of this application, and to fully guarantee its reliability and usefulness for the users, multiple sets of usability and satisfaction tests were carried out, whose results are analyzed later.

Lastly, the development of the several stages of the application was based on two scenarios showcasing the needs of two possible types of social network users, who might stand for the average user of sports websites. Therefore, the features of MySportsFace were designed to cater for their personal needs and interests.

## 2. Social Media and Sports Applications

In order to develop an application with the required features identified in the previously mentioned scenarios, other sports organizations' websites and applications were investigated and evaluated against a set of criteria. These websites and applications are described next.

The MySportsFace application has various architectural and functional requirements which translate into a number of criteria used to evaluate the social media websites and applications studied. The criteria used to evaluate each website and application were:

- Users are able to become registered members of the application or website and possess an editable profile;
- Provides a way of showing event results, standings and information in general;
- Users are able to sign up for events;
- Allows users to view, upload and share multimedia content (images and/or videos);
- Contains news articles and posts, users can leave comments.

The list below includes the websites and applications evaluated:

- Website of Fédération Internationale de Ski (FIS)
- Website of NASCAR
- SPORT TV Multiscreen Application
- BeSoccer Application
- Website of Ski Clube de Portugal
- Website of Federação de Desportos de Inverno de Portugal (FDI-PT)
- Website of Federação de Triatlo de Portugal (FTP)

### 2.1. Evaluating the website of FIS

To start with, the website of FIS [2] has a large amount of information and additional multimedia files (images and videos), which causes it to load quite slowly.

Additionally, users can perform the task of browsing information, event results and even image galleries, but in the case of the latter, the interface that users have to work with is not user-friendly, as it does not provide enough information on how to move to previous or next images.

Moreover, users are not able to perform registration at the website, but there is a place to log in. Likewise, users are not able to register for any events using the website.

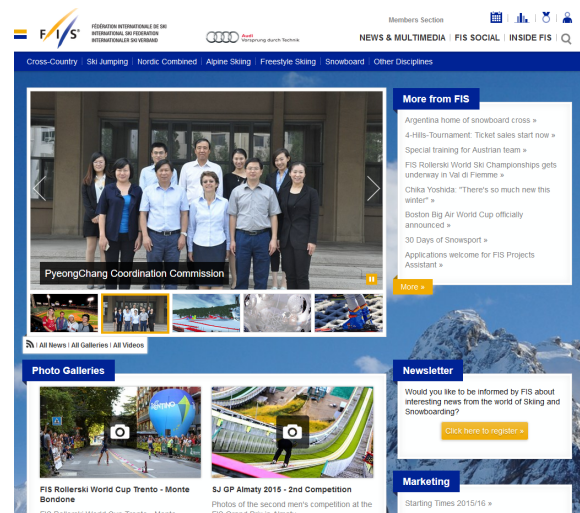


Figure 1: Layout of the website of FIS.

On the other hand, a positive feature is that the navigation bar located on the top of the website, as seen in Figure 1, is divided into the various sports modalities that the federation promotes, which facilitates browsing information for a specific sport.

Lastly, the news articles available on the website may be commented and even shared on social networks such as Facebook and Google+.

## 2.2. Evaluating the NASCAR website

Unlike FIS, the NASCAR website [4] loads quite a lot faster, despite having various images for the news articles in the initial page.

The website has a navigation bar which has links to the various events and their respective results and standings, as seen in Figure 2.

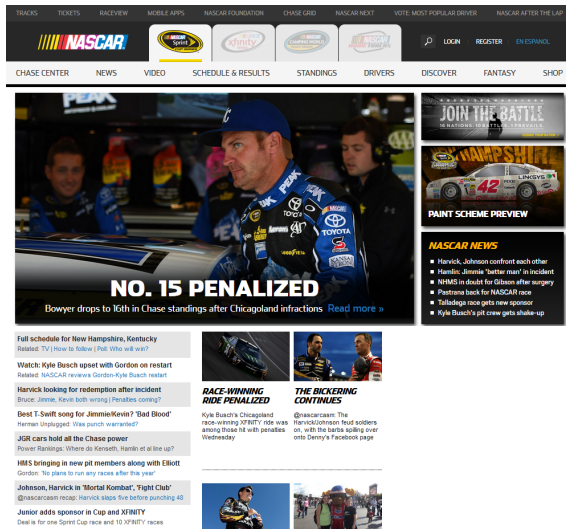


Figure 2: Layout of the website for NASCAR.

However, while users may not become federated members of NASCAR (since NASCAR is not the same kind of organization as FIS is), they are still able to easily register at the website, in order to then post comments on published news articles. Also, users may view but not upload or share multimedia content on the website.

Since the website works as a news feed, it does not allow users to register for any of the events and races, as that is reserved for the racers themselves.

## 2.3. Evaluating SPORT TV Multiscreen Application

The SPORT TV Multiscreen Application is used to broadcast various sports matches and events, but it also allows its users to browse specific videos and results of matches that have already occurred.

Unfortunately, the application does not allow users to comment on ongoing or past sports matches and events, nor does it allow multimedia content uploading and sharing. Additionally, in order to use the application, users must have subscribed to the SPORT TV channel beforehand.

Figure 3 shows the main interface during an ongoing football match, with links to other matches and results below.

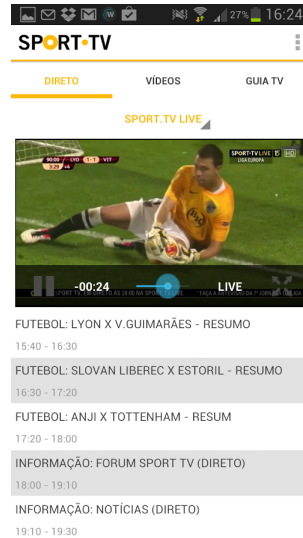


Figure 3: Interface of the SPORT TV Application showing an ongoing football match and overviews of other matches.

## 2.4. Evaluating BeSoccer Application

Similarly to the SPORT TV Application, BeSoccer has its focus on broadcasting match and event results, but in this case only related to a single sport, football. However, users may write comments on each match or event, after performing their registration on the application, as seen in Figure 4.

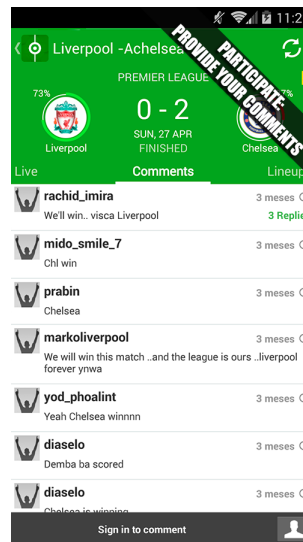


Figure 4: Interface of the BeSoccer application where users can leave comments, during an ongoing or past sports match.

The downsides to this application, much like SPORT TV, are that it does not possess any kind of news articles and information and there is also no way for users to view, upload or share multimedia content (images or videos).

## 2.5. Evaluating the website of Ski Clube de Portugal

The website of Ski Clube de Portugal [5] is still heavily "under development", therefore several sections still do not possess any information or purpose yet.

Despite that, the website contains a news articles section which can be browsed by users, but the articles may not be commented.

In regards to the sports events, the website contains a few registration forms (with Google Forms), which allow users to sign up for some events sponsored by the club. On the other hand, the website does not have a section for browsing event results or standings and users cannot upload or share multimedia content through the website.

Finally, users do not need to be registered on the website to perform any of the previous tasks, but they would not be able to anyway, as the website does not possess a registration form.

## 2.6. Evaluating the website of FDI-PT

The website of Federação de Desportos de Inverno de Portugal [1] has some events which users can register for, but only after becoming members of the federation.

Moreover, the website also has various news articles that usually contain images which can be shared through social networking websites. Users cannot write comments on these articles nor upload any type of multimedia content.

Lastly, still on the topic of the news articles section, there are very few articles which showcase the results and standings of events.

## 2.7. Evaluating the website of FTP

Last but not least, the website of Federação de Triatlo de Portugal [3] is divided into various sections: one for events and results, one for news articles and information, and several others for social media links and the website member registration. The layout of the frontpage is shown on Figure 5.

In terms of registration at the website, all that users need to do is fill in a form with their personal data and attach a few documents to show proof of payment for the fees as well as the results of a sports medical exam.

Furthermore, the section of the website which lists the events works like a calendar that users can browse. Selecting a specific event will pop out a window showing the details and important documents for the event. When available, the event window will contain registration forms which users may fill in to sign up for the event.

Regarding the news section, the articles do not have an area for the users to write comments and the website, in general, does not allow users to share or upload multimedia content.

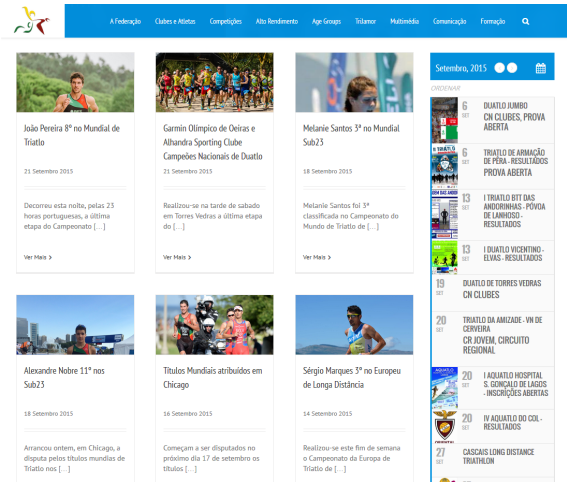


Figure 5: Layout of the website of FTP.

## 2.8. State-of-the-art Overview

To conclude this section on websites and applications with goals similar to MySportsFace it can be said that, while some of the investigated websites and/or applications fulfill some of the criteria defined below, such as the capability to sign up for events and competitions, others focus more on the social aspect of federations, allowing users to browse content (news, images and videos) on the website or application and, in some cases, even letting users leave comments on the news articles. However, there is no website or application that fulfills all the criteria, which is the desired goal for the MySportsFace application.

Table 1 below shows a summary of all the criteria fulfilled (partially or fully) by each website and application, and the ones they do not.

	1	2	3	4	5
FIS-SKI	O	✓	X	O	✓
NASCAR	✓	✓	X	O	✓
SPORT TV	X	✓	X	O	X
BeSoccer	X	✓	X	✓	X
Ski Clube PT	X	X	✓	O	O
FDI-PT	X	X	O	O	O
FTP	✓	✓	O	O	O

Table 1: Summary of all the criteria respected by each website or application reviewed (✓ means the application/website fully respects the criteria; O means the application/website partially respects the criteria and X means the application/website does not respect the criteria).

The criteria represented by the numbers in Table 1 are listed below:

1. Users are able to become registered members of the application or website and possess an editable profile;

2. Provides a way of showing event results, standings and information in general;
3. Users are able to sign up for events;
4. Allows users to view, upload and share multimedia content (images and/or videos);
5. Contains news articles and posts, which users may comment on.

### 3. Selecting Tools and Technology

In order to build the MySportsFace application, various programming languages and tools were needed. The application runs on top of the Ruby-on-Rails framework, so the organization of the framework and the benefits of using it over Python's Django, Microsoft ASP.NET and Zend Framework will be described.

#### 3.1. Microsoft ASP.NET

Microsoft ASP.NET [10] is one of the most commercialized tools for developing web applications. It supports code written in .NET (which is C#) and comes with various AJAX script libraries by default. Projects made with ASP.NET also have a MVC architecture, which uses WebForms to build the website pages. Moreover, developers can program both the client-side and the server-side of the applications and, to facilitate the application creation process, ASP.NET is compatible with Microsoft Visual Studio, which comes with various code writing quality of life tools, much like other Integrated Development Environments (IDE), such as Eclipse for the Java language.

However, when creating a new project using ASP.NET, the developer has to do several things manually, such as creating files and selecting the correct location to place them, in order for the application to work properly. Additionally, there are few open-source projects and external code libraries that developers can use to increment their software, making ASP.NET a less desirable web framework.

#### 3.2. Zend Framework

Zend Framework [8] is one of the oldest commercialized frameworks used for web development, based on PHP.

Some of its qualities are that it supports most types of database and has well-made tools and extensions for the construction of applications. A few of these extensions include: page and data caching, job queues, code tracing and insight, clustering, web server and deployment support and software updates and hotfixes.

However, Zend Framework does not provide tools for automated file generation like Ruby-on-Rails or Django, unless we use their own additional software program, Zend Server, which is a paid service.

Therefore, Zend Framework was discarded from the available choices for MySportsFace.

#### 3.3. Ruby-on-Rails vs. Django

The two most used web frameworks are Ruby-on-Rails [6] and Python's Django [7]. Similarly to Microsoft ASP.NET, these two frameworks also adopt a MVC architecture.

Django encourages a rapid and clean development and pragmatic design, by helping developers take their ideas and turn them into applications as quickly as possible, since it is an averagely easy framework to work with, thus making it suitable for people under strict timelines.

Moreover, Django also has built-in features to counter several security hacks and is built around a shared-nothing architecture, meaning that extra hardware can be added to run the application without requiring changes to the software.

On the other hand, Ruby-on-Rails also provides the same scalability, the same security mechanisms and the same versatility that Django has, by using open-source plug-ins and API's created by the Ruby-on-Rails community. It also adds a superior testing environment and a simple-to-use routing table based on resources (instances of database models).

Lastly and most importantly, Ruby-on-Rails has a much larger open-source community that is eager to post tutorials, guides and create plug-ins.

All things considered, Ruby-on-Rails was the best choice for the development of MySportsFace, not only because the remaining frameworks had downsides, but also because Ruby-on-Rails comes with better features and an environment more equipped for building applications from scratch.

#### 3.4. Ruby-on-Rails Projects

Each Ruby-on-Rails project contains various folders, each with a different task. The most important ones are the "app" folder, which contains all the main code, libraries and assets used to make the application work, the "config" folder that contains the necessary configuration files and the routing table and, finally, the "test" folder used to contain the unit test files.

Besides, applications made with Ruby-on-Rails also possess a "Gemfile" which is used to specify all the Ruby gems used in the project. These gems are external libraries and they can be used to select database types, web servers or even add other tools to applications.

Since Ruby-on-Rails is based on Object-Oriented Programming and the Model-View-Controller architecture, creating web applications with it becomes relatively easy. Classes are represented as "models" and they are directly linked to database records. Relations between classes are translated

into database table relations, by using keywords such as `":belongs_to < x >"` and `":has_many < x >"`, where `< x >` is the name of a model.

Furthermore, "controllers" are files used to help create, delete and change resources and to define which resources are available when and where, through routing. Nevertheless, routing is done on a separate file "routes.rb", where developers can specify the various kinds of resources that should exist and the HTML protocols (GET, POST, PATCH and DELETE) where they will be allowed to be used. To do this, Ruby-on-Rails has various code keywords, like `":create"`, `":destroy"`, `":index"` and `":show"`, respectively used to create (POST) or destroy (DELETE) instances of a model and listing all instances or showing one single instance (GET).

To conclude, "views" are the various website pages that users can visit and they usually involve using code written in Ruby (to use helper methods from the models and controllers), HTML (to define the layout of the page) and CSS and JavaScript (to stylize the pages or add important scripts to them).

### 3.5. Ruby Gems and External Libraries

The MySportsFace application would require an extreme amount of time and effort to develop if it were not for the help of external libraries and open-source scripts. A brief listing and description of the gems used will be presented here.

First, in terms of quality of life for coding, the following Ruby gems were used: SASS-Rails and CoffeeScript-Rails. The former improves the syntax of CSS code and the latter does the same, but for JavaScript.

Moreover, most of the layout of the MySportsFace application is directly controlled by the collection of Twitter Bootstrap gems, providing default style-sheets classes and basic scripts. These gems are Bootstrap and Bootstrap-SASS. Additionally, Bootstrap also provides form support (using helper methods from the Bootstrap-Forms gem) and a pagination mechanism (Bootstrap-Will-Paginate gem). The rest of the layout of the application is further augmented by using a set of icons provided by Font-Awesome-SASS.

As for scripting, and to use jQuery in the application, the jQuery-Rails gem was included along with a few other gems that make the website more responsive (Turbolinks and jQuery-Turbolinks).

Furthermore, the type of databases used on MySportsFace vary depending on the environment where the application runs. If it is running locally, on a development environment, the SQLite gem will activate, providing the application with only the necessary database functions. Otherwise, if running on a production environment (as deployed on Heroku as will be explained later), the PostgreSQL

gem will be active, as it is the only type of database supported by Heroku. The same logic applies to the type of web servers used; during development, a simpler web server, called WEBrick was used, which is less scalable, but good enough for one developer coding and browsing the website pages; and during production, a much faster and highly scalable web server called Puma was used, to account for a higher amount of web traffic.

In terms of the remaining features of the application, such as image uploading, three Ruby gems were necessary: Carrierwave, MiniMagick and Fog. The first one was used to enable file uploads in general, by allowing the developer to create "Uploaders" and add them to any website page. The second was used to perform transformations to the images as they are being uploaded. Lastly, the third one was used to enable file cloud storage for the images, when using a cloud storage service, such as Amazon S3. The images uploaded with the previous gems have to be shown to the users in some way, which is why the application also includes the Rails Gallery gem, that provides an easy way to create image galleries and slideshows.

Regarding another feature of the application, supporting organizations and retrieving information, the Superfeedr gem was included with the purpose of subscribing to RSS feeds of organizations and collecting the most recent and up-to-date news articles asynchronously. Whenever users make a GET request to an organization's page on the application, this gem will asynchronously grab the latest articles from the feeds and insert them into the application's database.

Another aspect of MySportsFace is that it has a multi-authentication system, which allows users to log into the application using either a Facebook account, a Google account or the MySportsFace account. This is possible through the use of the OmniAuth gem that allows the application to communicate directly with the external API's of these social networks and then use them as authentication providers for logging in.

Last but not least, the application would not be innovative if it did not merge the concept of a sports organization hub with the concept of a social network. Thus, in order to add a social component to the application, such as content voting or rating, another last Ruby gem was added, Thumbs Up, which implements a voting mechanism. Additionally, another social aspect of the application is the ability that users have to write comments on various contents of the application, which is complemented by the use of a JavaScript library, NicEdit. This library increments the text area fields where users can write their comments, by making the text editable and customizable, working as a façade for



users writing HTML code without knowing that they are doing so.

#### 4. The MySportsFace Application

In this section, the application will be described from a user's point of view, analyzing all the usable features of MySportsFace architecture.

The application is divided into four important modules: users, organizations, customized events and the remaining "static pages".

##### 4.1. Users

Users have multiple identities which they may use to log into the application and they may form relationships with other users, by actively following them or by being passively followed by someone else.

Figure 6 shows an example of a user profile with the post count for that user and the "Follow/Unfollow" button placed above. To the left of the figure a small section can be seen which contains links to the user's posts, followers and users being followed and also events the user is participating in.



Figure 6: Example of a user profile and the content displayed in it.

The other tasks that users of the application can perform range from creating posts ("mood/wall updates") to commenting news articles or even creating their own events, as explained later in this section.

##### 4.2. Sports Organizations

Since MySportsFace is a hub for several sports organizations and their members or sports fans, it is important that there is enough information for everyone to browse. However, there were several constraints in terms of the content available to be retrieved from various organizations.

With this said, the only way of extracting information into MySportsFace is through the use of RSS feeds and the Superfeedr gem mentioned on section 3, but only a few worldwide organizations possess feeds and even those have inconsistencies in the way they present information.

More specifically, when the entries of a RSS feed are extracted, they are parsed to check for certain

tags, "content" and "description", which respectively contain the full body and summary of the articles. The way MySportsFace works is that it checks for the availability of the "content" when possible and if it does not exist, the "summary" tag (which has so far always been present) is used as body of the news article in the application. When only the description is available, the extracted article will have a link to the original version, so that readers can view the whole topic.

Despite this constraint, the application is ready for adding new organizations when they start using RSS feeds, by using a tool in the website which allows any administrator to manually add them. This process should be done with caution as it involves adding images to serve as logos for the organizations and small portions of text as captions that introduce them.

##### 4.3. Customized Events

Custom events are one of the innovative parts of the application, where users get to create their own content and share it with the world. The events have a title, a description, an editable schedule, the list of participants and the time, date and location of the event. The location is also complemented with the usage of Google Maps to easily identify the place where the event will occur and how to get there. Figure 7 shows an example of the event information shown.

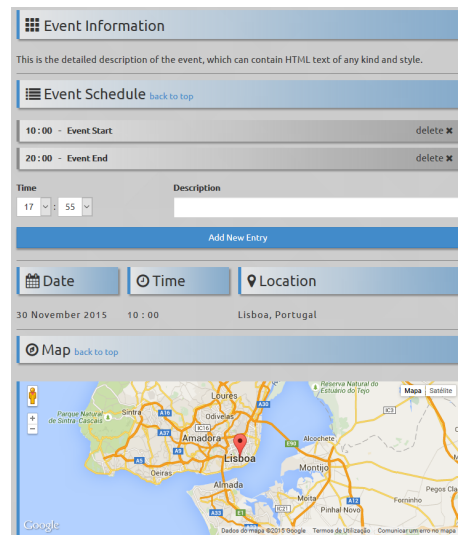


Figure 7: Section of an event page showing its information.

Additionally, users who register for an event may upload images from their devices and link videos from YouTube and Vimeo (the most used and popular video hosting services on the Internet). Some restrictions apply when uploading images, as they must be smaller than 4 Megabytes and have one of

the following formats: ".jpg", ".jpeg", ".gif" and ".png".

Once an image is uploaded, it will be shown in the gallery provided by the Rails Gallery gem mentioned earlier. Afterwards, only the creator or administrators of the event may remove the images.

Regarding videos, MySportsFace validates the links that users input before linking them, to make sure they are not malware. Once the video links are validated, the videos are shown in a slideshow at the event page, similar to the images.

#### 4.4. Posts and Comments

It has been previously mentioned that an important characteristic of the application is that users should be able to communicate and send messages. Therefore, with the Posts module, users can send small messages similar to "tweets" on Twitter. These will be viewed by anyone connected with the user (by "Following").

However, writing posts is not the only feature that allows users to express themselves. Every news article extracted from organizations and the events created by users can be commented. Comments should function as a way for users to write what they feel/think about the topics and events or to reply to other users' thoughts.

#### 4.5. Voting System

Last but not least, the remaining feature of the MySportsFace application is the ability that users have to rate and vote for the content other users provide and also the content provided by organizations. These include posts, comments, news articles and events.

In other words, users can show their appreciation by "starring" the content. This is accomplished using the Thumbs Up gem, which turns architecture models into "voteable content". The only thing users have to do to vote or rate the contents of the application is click on the small star icons at the top right corner of the elements, as seen in Figure 8.

#### 4.6. Heroku Deployment and Amazon Web Services

After every major advancement in the development of the application, MySportsFace was deployed at Heroku, a cloud service that provides a simple form of storing and deploying web applications. The deployment process is done by using Git and pushing the content from the master branch of the repository to the Heroku branch.

Similarly to other commercial products, Heroku usually requires paid subscriptions to be used, unless the amount of "dynos" used (processes located in their virtual machines, used to run the deployed applications) is limited to one. Therefore, to maintain a "free" status, MySportsFace runs on a sole



Figure 8: Three posts showing star icons for voting, with their respective descriptions.

"dyno".

Unfortunately, applications deployed at Heroku run on top of a volatile file system, meaning that any uploaded files will disappear after a certain amount of hours.

Since the application has an image upload feature, this constraint at Heroku affects the way the event gallery works.

However, steps were taken to ensure that if and when required, the application can safely store the uploaded files. Hence the integration with the Amazon Web Services and, more specifically, the Amazon Simple Storage Service (S3). In order to perform this integration, an account at Amazon had to be created and secure API keys retrieved. The keys granted API access to the MySportsFace application and afterwards all that was necessary was to add a script which performed image upload from the application into Amazon S3.

### 5. Testing and Results

Once the application reached a state where its most important features were implemented, tests started being conducted, to verify that the features were working as intended and that the targeted users had the best usability and experience using the application.

#### 5.1. Unit Tests

With the first of the aforementioned objectives in mind, a series of unit tests was created and automatically executed using Ruby-on-Rails' testing environment on a computer with an Intel CORE i7 2.3Ghz quad-core processor, Windows 8.1 operative system and 8GB of RAM memory available.

These tests validated the implementation of models, the routing and resource management of controllers, as well as use-case scenarios of the applica-



tion through integration tests. Together, these tests tried to cover as many corner-cases as possible so as to prevent most bugs and glitches.

Moreover, to conduct these tests, a different database composed of fictional records was created, by using Ruby-on-Rails Fixtures, which are elements specified with tag names that are parsed by the testing framework to create real objects in the testing database.

Once the tests were coded, the "rake test" console command was used to execute them. Additional command arguments were used when specifying just a subset of the tests to be executed (e.g. "rake test:integration").

## 5.2. Usability and Satisfaction Tests

However, no application is fully tested until users themselves start using it. For this, two usability and satisfaction testing phases were conducted.

These usability and satisfaction tests consisted in users completing 11 tasks, chosen from the same scenarios mentioned already in Section 1. This set of tasks was first measured with the help of users, to find out the average task completion time for each task.

Afterwards, for the first testing phase, a group of 10 users was gathered and asked to complete the tasks, which would not take more than 10 to 15 minutes. For the second phase, a larger group of 24 users was formed, to have a wider range of responses and results. The tests were also conducted in a home environment to prevent users from getting distracted and to have less disturbances. As each task was performed, a timer started counting and it stopped once the user completed the task, monitored by the test conductor, who also counted the number of errors made.

After users completed the whole set of tasks, they were asked to answer a series of questions that attempted to understand their level of satisfaction with the application, as well as to retrieve possible suggestions.

The results for the average times and errors during the first testing phase can be seen on Figure 9 and the ones from the second phase on Figure 10.

Finally, Figure 11 compares the average task completion times of both testing phases. It can be concluded that all tasks conducted during the second testing phase had their completion times shortened, in average, due to changes that were made to the interface (like switching layouts and element positions, namely for event registration) and due to additional features implemented (such as the search mechanism for users, articles, events and organizations). Most of the changes were introduced from suggestions and complaints that users made during the first satisfaction questionnaire.

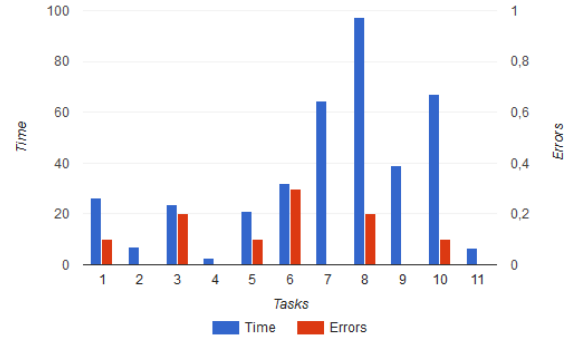


Figure 9: Average time and errors for each task during the first testing phase.

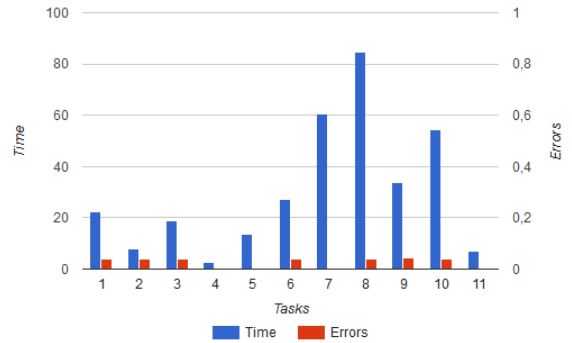


Figure 10: Average time and errors for each task during the second testing phase.

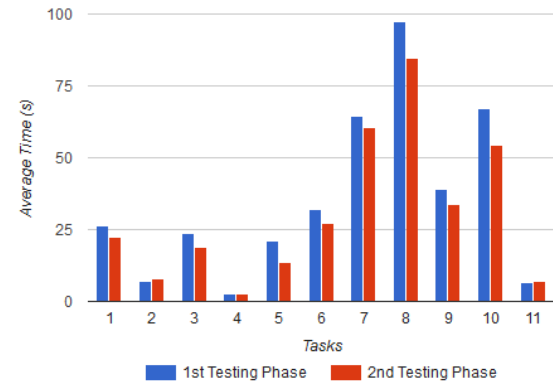


Figure 11: Comparison between the average task completion time results of both testing phases.

## 6. Conclusions

In this section, the most important achievements of this work and some ideas regarding some possible features for future work of MySportsFace are presented.

MySportsFace is a sports web application successfully created with the help of the Ruby-on-Rails web framework and several third-party APIs and programming libraries. It requires users to register and save their accounts at the website, so as

to later be able to perform several tasks, such as: browsing information from feeds of various sports organizations, socializing with other users through the use of comments and personal posts, as well as voting for content using the "star" system and creating customized events and uploading multimedia content (videos and images).

As for the interface of the application, made with the help of the Twitter Bootstrap API, it presents an aesthetic, minimalistic environment, with less but more important information displayed on each page. To check the usability of the application and the user satisfaction, two phases of tests were conducted. The first testing phase showed promising results, but still highlighted some flaws in the application design, such as the positioning of the "sign up" button in the custom events and the lack of a search mechanism. Both issues were successfully dealt with, the former by simply repositioning the button to the top of the event page, and the latter by creating a search bar for all types of content (users, events, articles and organizations). After this was done, the second testing phase showed even better results in terms of the time used for each of the tasks, therefore guaranteeing better usability and user satisfaction. Users also found quite useful the information displayed on the "About" and "Help" pages of the web application regarding the usage of the website.

### 6.1. Future Work

In what concerns the possible future work on this application, there are still many features that could be incorporated in it or better implemented, depending on the amount of time allowed to it.

One of the first constraints to accessing information issued by the sports organizations was the fact that not all of them have RSS feeds with the information. To tackle this issue, a crawling or big-data parsing mechanism [9] could be implemented and parametrized, so as to extract news articles, blog posts and other relevant information.

Also, the first architecture of MySportsFace envisioned the creation of a payment and online shopping service, which was later discarded since the websites of many sports organizations do not support online registration and payment. A possible way to solve this problem would be to include other external APIs in the application, such as SIBS or PayPal, but this would require a legal contract with the companies. Besides, this would also imply a bigger amount of web servers to provide a faster and more responsive application, otherwise the only server which MySportsFace runs on at the moment could become clogged and unresponsive.

Therefore, and to balance the cost of extra hardware requirements, MySportsFace could later in-

clude website advertisements to generate enough income to keep it running with the necessary amount of web servers. For this, a special spot was already allocated on the left of each page, below the user profile.

Finally, in the case a user wants to create customized multi-day or periodical events, it would only require the following: the addition of an extra column to the event table in the database, so as to include the date for the end of the event, and change the current "date" field to be the starting date and the creation of a database field indicating the period between event dates.

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