Cultural Center of Azrou
Web Application
Final Report

Ismael Kabbaj

Supervisor :
Dr. Bouchaib Falah

Coordinator :
Dr. Yassine Salih-Alj
Acknowledgements

I am deeply thankful to Dr. Falah for his commitment and help throughout the whole semester. Indeed, his advices were very helpful, timely and necessary for the advancement of my capstone. Moreover, I want to thank him for giving me the opportunity to work on this project and thus consolidate my four years long academic carrier. Last but not least, I also thank the whole team of the Culturel Center of Azrou for supporting me and helping me whenever needed.

Supervisor’s approval:
Abstract

The present capstone project provides a working web application to the Centre Culturel of Azrou. The chosen link, for the time being, is http://cc-azrou.000webhostapp.com. My website presents the main features of the Centre being:

Art gallery, libraries, events and finally its Centre for interpreting the patrimony.

The web application has social and cultural implications, inasmuch as it would be helpful to spread the word and let the Centre reach more visitors locally and abroad through Facebook or other social medias.

Finally, it is packed with detailed information, representative pictures and a fun virtual tour to thoroughly explore the Centre and excite the curiosity of the viewer.
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1 INTRODUCTION

It is well known now that any serious organization or company which is seeking visibility and recognition should go through the establishment of its own website. Indeed, most of us will go first to Google and search for the organization in order to find its website, and then look for the intended information. Thus, it is absolutely necessary to create a website.

In this optic, the present Capstone realizes a web application for the Cultural Center of Azrou. As its name suggests, this Center is located in Azrou and offers cultural services to the local and global community. It is based on three departments:

- The libraries: one for adults and one for children. It includes books ranging from philosophy to physics.
- The Centre for interpreting the Patrimony: There are exhibitions of the cultural richness of the region along with its natural and historical peculiarities.
- Art gallery: The Center possesses an art gallery where frequent expositions are held, featuring different artists.

Thus, the website is centered around these themes and seeks to offer a complete overview to the visitor. To do that, I opted for WordPress, which is a free open-source software to build my web application. WordPress has generated many professional-looking websites for many organizations and is well-known as being the best Content Management System available.
1.1 Purpose
The goal of my capstone is to implement a working, efficient website for the Cultural Centre of Azrou. This will help them gain visibility, reach out to more people and let the people know latest events and expositions.

1.2 Scope
The scope of this project limits itself to the presentation of the Centre. However, it does provides services such as comments, contact and virtual tour.

1.3 Background
The Capstone project builds itself upon the whole undergraduate cursus and aims at achieving a high-quality end product that will reflect our mastery of computing technologies.

1.4 References
- Capstone Diaries
- Appendices
- Other references

1.5 Assumptions
I assume that the legal framework permits me of creating this website and it does not infringe any law or regulations.

1.6 Document Overview
The mid-report provides a description of the work done so-far and a more in-depth look to the functionalities and specifications of the project.
2 FEASIBILITY STUDY

Technology and cost

I will use free and well-known technologies to develop my website such as:

- **CSS** stands for Cascading Style sheets, it describes the layout of a certain page written in markup language.

- **HTML 5**: This language is used to construct web pages through markup language.

- **Wordpress**: Wordpress is Content Management System, which is free and open-source.

These technologies are open-source and free, which will permit me to have an economically sustainable project and would not be constrained by the limits of money and limited trials.

Data

It is crucial to have accurate and representative data. In order to do so, I will rely on the collaboration with the Cultural Centre to provide me with the necessary data to display on the websites. Such items would be a numerical database for the available books, pictures of historical objects and such, or some posters and pictures of the centre.

Benefits and risks

The website would have great benefits for the cultural scene in the Azrou region since it will allow the general public to know about the museums and know more about our history and common patrimony. This kind of information is unfortunately missing in our everyday lives, the website would be then a welcome contribution.

Concerning the risks, they are minimum. The website does not require advanced security and time delays are reasonable. Therefore, the project does not face serious risks.
An important challenge is to respect all the deadlines and deliverables. Thus, an essential part is to organize the work as to respect the following due dates:

<table>
<thead>
<tr>
<th>Wk.</th>
<th>Dates</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>16-20/1</td>
<td>Project selection</td>
</tr>
</tbody>
</table>
| 2   | 23/1-27/1 | Project Initial Specification(*) and Email
(if any; see assignments details below) **due: 27/1** |
| 3   | 30/1-3/2  | The Feasibility Study and Analysis(*) is **due: 3/2**         |
| 4-7 |           | First Capstone Diary(*) is **due: 6/2**
Capstone diaries are **due by Monday of each week** following this.
Continuous work on project (reporting progress)
**Interim Report(*) due: 3/3** |
| 8-12|           | Continuous work on project (reporting progress)               |
| 13  | 11-15/4   | **Final Report and Professional CV(**) **due: 10/4 (Firm Deadline)** |
| 14  | 18-22/4   | Project defense **due: Mon.-Fri. 17-21/4**                   |
| 15  | 25/4-29/4 | Any corrections to report/project implementation finished.
**Updated Final Report is **due: 28/4** |
3 METHODOLOGY

In order to come up with a viable, efficient project, technical skills are surely not enough. Indeed, a thorough understanding of the requirements and the specifications are necessary to realize this project.

To do so, I had to know more about the Cultural Center of Azrou and what it contains. I went there several times to get more familiar with the different facets of the center and its employees, trying to gather as much information as possible. In order to keep up the quality and design the desired features, I am constantly in touch with the manager.

Thus, I decided to rely on the incremental technique to realize my project. That allows me to regularly present the increments to my supervisor and the manager of the center to get feedback and comments. Also, it gives the possibility of changing any desired feature or function, which is invaluable in creating a website.
4 STEEPLE ANALYSIS

Socio-Cultural factor:
The website of the Cultural Centre of Azrou is of utmost important for the cultural scene in Morocco, as it will open the gates of the Centre to anyone interested in knowing more about the history of our country, and more especially, a not very well-known region: Azrou. Thus, it will be valuable for the society at large as it will create more awareness about our great patrimony.

Technological factor:
The website will be easily accessed since it is hosted on a free web server. The website is responsive, it can be viewed from a phone, a tablet or a laptop. Thus, it does not require much resources or prior knowledge and is easily accessed and user-friendly.

Economic factor:
The use of free technologies made this project sustainable. This is due to open source software that are provided by many online communities.

Environmental factor:
Clearly, the website helps reduce the amount of paper and other material used to promote the Centre. Now it is enough to provide the link of the website instead of trying to reach people through paperwork. The project is then environmental-friendly and strives to be a part of sustainable practices.

Political factor:
The website does not endorse any political view nor does it represent a political party. It has then no political implications.

Legal factor:
The website does not violate any law or regulations. It is completely respectful of all standards and legal frameworks.

Ethical factor:
There are no ethical infringements. All the information are given directly by the Centre and the pictures do not violate any propriety rights. Also, the web application does not collect information about users or other intrusive activities.

5 FUNCTIONAL REQUIREMENTS

1. Visitor Interaction

<table>
<thead>
<tr>
<th>Req</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.1</td>
<td>The visitor shall view all pages related to the center</td>
</tr>
<tr>
<td>1.2</td>
<td>The visitor shall view videos and pictures</td>
</tr>
<tr>
<td>1.3</td>
<td>The visitor shall comment on posts and pictures</td>
</tr>
<tr>
<td>1.4</td>
<td>The visitor shall send suggestions</td>
</tr>
<tr>
<td>1.5</td>
<td>The visitor shall explore the center through the virtual tour</td>
</tr>
</tbody>
</table>

2. Editing, Updates and Administration

<table>
<thead>
<tr>
<th>Req</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.1</td>
<td>The moderator shall update new events and posts</td>
</tr>
<tr>
<td>2.2</td>
<td>The moderator shall update pictures and comments</td>
</tr>
<tr>
<td>2.3</td>
<td>The moderator shall add new books to the Database</td>
</tr>
<tr>
<td>2.4</td>
<td>The moderator shall add new items with description</td>
</tr>
</tbody>
</table>

3. Sitemap and Navigation

<table>
<thead>
<tr>
<th>Req</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>3.1</td>
<td>The web application shall present the Welcome page with a link to the other sections</td>
</tr>
<tr>
<td>3.2</td>
<td>The visitor shall navigate through the navigation tabs at the top</td>
</tr>
<tr>
<td>3.3</td>
<td>The web app shall present a page containing all new events and posts</td>
</tr>
<tr>
<td>3.4</td>
<td>The web app shall present a page about the Center</td>
</tr>
<tr>
<td>3.5</td>
<td>The web app shall present a page to view the patrimony section of the center and its different rooms</td>
</tr>
<tr>
<td>3.6</td>
<td>The web app shall display the latest events</td>
</tr>
<tr>
<td>3.7</td>
<td>The web app shall provide download link for the available books</td>
</tr>
</tbody>
</table>
4. **Content Management**

<table>
<thead>
<tr>
<th>Req</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>The administrator shall manage website through WordPress</td>
</tr>
<tr>
<td>4.2</td>
<td>The administrator shall create new pages</td>
</tr>
<tr>
<td>4.3</td>
<td>The administrator shall login to the admin page through credentials</td>
</tr>
</tbody>
</table>

5. **Tracking (website statistics)**

<table>
<thead>
<tr>
<th>Req</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>5.1</td>
<td>The web app shall track number of visitors</td>
</tr>
<tr>
<td>5.2</td>
<td>The web app shall track number of comments</td>
</tr>
<tr>
<td>5.3</td>
<td>The web app shall track number of messages</td>
</tr>
</tbody>
</table>

6. **Search Engine Optimisation (SEO)**

<table>
<thead>
<tr>
<th>Req</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>6.1</td>
<td>The web app shall optimize visibility on Search engines (fees)</td>
</tr>
</tbody>
</table>

7. **Editor Interface (Web Content Management System)**

<table>
<thead>
<tr>
<th>Req</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>7.1</td>
<td>The web app shall present an admin page</td>
</tr>
<tr>
<td>7.2</td>
<td>The web app shall allow to add post</td>
</tr>
<tr>
<td>7.3</td>
<td>The web app shall allow to add photo or/and text</td>
</tr>
</tbody>
</table>
8. **Accessibility**

<table>
<thead>
<tr>
<th>Req</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>8.1</td>
<td>The web app shall display on laptop screen</td>
</tr>
<tr>
<td>8.2</td>
<td>The web app shall display on mobile screen</td>
</tr>
</tbody>
</table>

9. **Styling and Design**

<table>
<thead>
<tr>
<th>Req</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>9.1</td>
<td>The web app shall be based on green and white colors</td>
</tr>
<tr>
<td>9.2</td>
<td>The web app shall display the logo of the Center</td>
</tr>
<tr>
<td>9.3</td>
<td>The web app shall display modern and responsive design</td>
</tr>
</tbody>
</table>

10. **Security**

<table>
<thead>
<tr>
<th>Req</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>10.1</td>
<td>The web app shall protect information of the Admin (Centre Culturel)</td>
</tr>
<tr>
<td>10.2</td>
<td>The web app shall protect the confidentiality of the visitor</td>
</tr>
<tr>
<td>10.3</td>
<td>The web app shall deliver safely the message</td>
</tr>
</tbody>
</table>

11. **Hosting**

<table>
<thead>
<tr>
<th>Req</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>11.1</td>
<td>The web app shall be hosted in a free web-server</td>
</tr>
<tr>
<td>11.2</td>
<td>The web app shall have its own website (link)</td>
</tr>
<tr>
<td>11.3</td>
<td>The web app shall have the possibility to buy own domain</td>
</tr>
</tbody>
</table>

12. **Maintenance and Support**

<table>
<thead>
<tr>
<th>Req</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12.1</td>
<td>The web app shall have recovery in case of disaster</td>
</tr>
<tr>
<td>12.2</td>
<td>The web app shall provide continuous support through updates</td>
</tr>
</tbody>
</table>
6 Non-Functional REQUIREMENTS

Product requirement:

Performance requirements: The web app should be responsive and should not display any delay

Space requirements: The web app should be lightweight and easy to load (less than 200Mb)
Dependability requirements: The web app should not break down.

Security requirements: The web app should be protected from external attacks or hacking.

Usability requirements: The web app should be user-friendly and easy to navigate.

Organizational requirements:

Delivery requirements: The web app should be delivered in the set deadlines.

Implementation requirements: The web should be implemented following the guidelines set by the organization.

Standards requirements: The web app should respect all the ethical and academic standards.

External requirements:

Safety requirements: The web app should not cause any harm to the external environment.

Ethics requirements: The web app should comply to the IEE ethics standards.

Privacy requirements: The web app should not enclose any information concerning the Administrator.
Figure 1. Use case diagram
Figure. Sequence Diagram
7 DEVELOPMENT AND IMPLEMENTATION

Languages used:

**CSS**: CSS is an important part of any website. Plus the CSS code provided with Wordpress, I used some custom CSS to improve and customize the design of my website, such as alignment, roll button, gallery personalization etc.

Here is a snippet of some of my code, which aims at modifying the design of the header and the displayed photos of gallery:

```
.widget_sydney_latest_news .roll-button {
  display: none;
}
body > .preloader{ display: none; }
.widget-area .widget {
  padding-top: 0;
}
.site-info {
  text-align: center;
}

#gallery-1 {text-align: center;}
figure.gallery-item {margin: 5px; width: 267px; display: inline-b
```

**HTML**: Also, I had to use HTML to create a form. The User will fill in this form with his/her name and information, along with the subject and the text of the message. These will be sent directly to the e-mail address provided.
To do this, I used the following code:

```html
<form>
  <p>Votre nom (obligatoire)<br />
     [text* your-name] </p>

  <p>Votre e-mail (obligatoire)<br />
     [email* your-email] </p>

  <p>Objet<br />
     [text your-subject] </p>

  <p>Votre message<br />
     [textarea your-message] </p>

  <p>[submit "Envoyer"]</p>
</form>
```

**Plugins:**

*Definition*: A plugin is just a piece of code that is integrated to WordPress in order to add some functionalities, change the design or customize the page. Most of them are written in PHP. I have used many plugins to make my website attractive and very user-friendly, and also attain maximum satisfaction from the part of the manager.

**Plugins used:**

Here are some of the plugins I used, along with their description:
- Advanced code editor: “Enables syntax highlighting in the integrated themes and plugins source code editors with line numbers, AutoComplete and much more. Supports PHP, HTML, CSS and JS.”

- Akismet anti-spam: This plugin is used to protect the website from spam, everytime. I had to set up my API key to activate and use this plugin.

- Contact Form 7: It is a flexible contact form plugin.

- Easy Facebook Likebox: it allows to “display facebook like box fan page on your website using either widget or shortcode to increase faebook fan page likes.”

- Header and Footer Scripts: it allowed me to insert code to modify my header and footer.

- iPanorama 360 Lite: I used this plugin to create a virtual tour of the Cultural Centre, using 360 pictures and hotspots to go through each room.

- Page Builder by SiteOrigin: It simplifies the building of the website.

- Recent Posts Widget Extended: It enables me to show the latest posts at the page so the user can easily access them.

- Polylang: This plugin enables me to translate the website.

- Simple lightbox: The plugin addresses the use of lightboxes.

- SiteOrigin Widgets Bundle: Contains many widgets to use and customize.

- Sydney Toolbox: This plugin is used along with my theme to customize post types and custom fields.

- TJ Custom CSS: It eases the adding of CSS code to the website.

- WP Meta and Date remover: It improves the look of posts by removing the meta data.

- WP super Cache: It permits the management of caching.
Theme:

*Definition*: A theme in WordPress is a collection of files that make up a graphical interface that we can control and change, but with a unified vision for the design of the website. We can view this as the “skin” of the website.

To do this, the theme does not modify the underlying software. Rather, it uses customized template files, whether it is images (.jpg), style sheets (.css) or other code files (.php). [1]

Sydney

The official Sydney Theme defines it as a “powerful business theme that provides a fast way for companies or freelancers to create an awesome online presence. Sydney brings plenty of customization possibilities like access to all Google Fonts, full color control, layout control, logo upload, full screen slider, header image, sticky navigation and much more. Also, Sydney provides all the construction blocks you need to rapidly create an engaging front page.” [2]

Child Theme

Child Theme is like a subclass to a superclass, which is the initial Theme. It is used to modify and customize the parent theme while preserving the ability to update the theme and not losing all the custom styling and changes that were added.

Thus it provides the following advantages:

1. Safe updates of the parent theme without losing the modifications.
2. Easy extension: it is easy to add new functionalities to the original theme.
3. Safe fallback: you can always come back to the parent theme to get the desired functionality.
However, the use of child themes can present some drawbacks. Indeed, it took me a lot of time to first get acquainted with the parent theme so that I can bring changes to the child theme.
Thus, I chose to go with a child theme and use it to save my modifications. [3]

**Examples**

Some very good, modern websites inspired me to go with this similar theme. Here are some examples:
- Nicke’s Website

![Nike’s Website](image)

Figure 1. Nike’s Website
Apple’s Website

Figure 2. Apple’s Website
THE REFRESHING TASTE OF COCA-COLA BEVERAGES PAIRED WITH NEW AND REWARDING EXPERIENCES.

Figure 4. Coca Cola’s Website
**Screenshots of the implementation**

This is the Dashboard page. Here is the tabs for all components of the interface and provides the latest notifications or warnings.

![Dashboard of Wordpress](image)

**Figure 4. The Dashboard of Wordpress**
This is how a page is constructed. It consists of many rows where you insert the widgets you want, to then fill them with the necessary information.
Here is shown how to edit the .php files of the website and customize it through CSS:

Figure 6. CSS style sheet
Finally, below is an example of the use of a plugin, the one used to create a 360 degrees photo:

![Ipanorama Plugin](image)

**Figure 7. Ipanorama Plugin**
Screenshots of the web application:

First, this is the front page of the website:

Figure 8. Welcome Page of the Website
Still in the front pages, those are the “services”, links to the different department of the Centre:

Figure 9. Departments and Links
Finally, in the front page, there are options and links to contact the Centre or get more information:

![Figure 10. Bottom of Welcome page](image10)

It presents itself in another form, on the rest of the pages:

![Figure 11. Contact Links](image11)
Here is the events pages, which displays some of the latest news, and gives links to further details (i.e, to the post page):

**Figure 12. Events**

- **Houssein Salamat**
  - Exposition des toiles de l'artiste Houssein Salamat
  - Durant le mois d'avril, la galerie du Centre Culturel d'Azrou [...]

- **Pièce théâtrale Flashback**
  - Venez découvrir la pièce théâtrale Flashback, le Mercredi 5 Avril [...]

- **Université du printemps à Azrou**
  - En partenariat avec l'Institut français de Velizy, venez découvrir comment [...]

---

*powered by [500webhost]*
This is an example of a post page, redirected from the Latest news events:

Figure 13. Post example
These are screenshots of the Practical Info page, which gives essential information about the centre along with a form to send an email to the Centre:

**Contactez-nous:**

Adresse : Centre Culturel d’Azrou, Place Hassan II, Azrou

Tel : 05 35 56 34 87

Horaires d’ouverture : Du Lundi au Vendredi (9h-16h)

---

Figure 14. Contact form and Map
The website has an important media presence, where we can view a gallery of images and watch a video of the website:

Figure 15. Gallery and video
Also, an important feature of the web application is its guided virtual tour. The user can rotate the image and navigate from room to room dynamically:

![Virtual tour](image)

**Figure 16. Virtual tour**
Le Centre Culturel d’Azrou est un établissement créé par le Ministère de la Culture dans le but de promouvoir le secteur culturel et de valoriser le patrimoine de la région du Moyen Atlas. Il dispose de divers aménagements ayant à la fois une vocation culturelle, artistique et éducative. Il s’agit de deux médiathèques (adultes et enfants), de la salle d’Informatique, de la galerie d’expositions, des ateliers, d’un espace de conférence pour l’aspect associatif et social et aussi du Centre d’Interprétation du Patrimoine du Moyen Atlas (CIPMA). Ce dernier regroupe un ensemble d’objets qui retraquent l’histoire de la région du Paléolithique inférieur à nos jours et qui couvrent à la fois le côté naturel, ethnographique et historique.

Le Centre Culturel d’Azrou inclut les aménagements suivants :

 Médiathèque Adultes
Finally, the web application permits to download some files, which are the catalogs for books in Arabic or French directly from the Libraries pages:

Figure 18. Link to downloadable file
9 **Difficulties encountered:**

One of the most challenging difficulties were the gathering of data and the mastering of a new tool. It took me some time to specify the data needed and then gather them bit by bit throughout the center.

Also, it took me a lot of time to get familiar with Wordpress and search for each necessary tool to perform the task I want or to provide the desired design, and the wealth of plugins existing makes it more difficult.

Finally, it was challenging to realize the virtual tour since I was not familiar with the process or the technology and it was hard to find how to implement it on my website.
10 Testing:

An important part of any software or application is testing. To be conform to all the standards and respect all the requirements, I had to go through all the testing steps and that was done successfully. To do so, I proceeded as thus:

- System testing:
  - Recovery testing: the website is able to recover from failures through constant maintenance and updates.
  - Security testing: the website is safe from any intruders and is protected by the latest malware prevention software.
  - Stress testing: Due to the quality of the web host, the website will not be overloaded with any amount of visitors.

- Performance testing:
  - Compatibility testing: The website is compatible with previous versions of web browser and mobile phones.
  - Timing testing: The website is response is quick and does not lag.
  - Environmental test: The website is environment-friendly.
  - Volume testing: No large amount of data is used in this case.

- Acceptance testing:
  - Alpha testing: Since the website follows a methodology similar to scrum, the website was continually tested after each version or update. Thus, I did constantly provide my supervisor with the latest updates to test the website under his supervision. The final version was also tested in front of Dr. Falah to test the complete website.
  - Beta testing: The website was also often checked by the manager of the center to get approval and advices. After completing the website, the manager tested the website on his own without my presence.

These steps, as learned in software engineering, were essential to maintain a certain quality and get feedbacks on the specifications and requirements.
11 Conclusion and future work:

I am very pleased to have contributed to the cultural scene of the Moroccan Kingdom and have promoted the Cultural Center of Azrou which is such an interesting place that deserves to be more known. Also, WordPress has been a great tool to be acquainted with and I am sure will be very useful for my future work and personal life also.

As future projects, I will still work with the Centre to improve the virtual guided tour with better technologies and keep updating the websites as new events and expositions appear.
12 References:

THEMES, retrieved from https://codex.wordpress.org/Using_Themes

SYDNEY, retrieved from https://wordpress.org/themes/sydney/