



**UNIVERSITY *of*
GREENWICH**

**NATIONAL COLLEGE OF INFORMATION TECHNOLOGY
(LILONGWE)**

**INFORMATION AND CONTENT MANAGEMENT
BSC COMPUTING (HONS)**

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1. Introduction

The website which is about to be cloned is at this URL [The National Museum of Computing \(tnmoc.org\)](https://tnmoc.org)

The website which has been developed is at this URL [The National Museum of Computing. – tnemoc \(dev-tnemoc.pantheonsite.io\)](https://dev-tnmoc.pantheonsite.io).

The video showing this website features is on this link <https://www.youtube.com/watch?v=qO-peLZCBfw> .

Below are the credentials which will be used to update the content on the website.

Username or Email	Marhar
Password	Martin2023

2. Review of Content Management Systems.

2.1. Introduction

Content Management System (CMS) is a computer program which allows users to cooperate and manage collections of electronic content with or without knowing how to write code. In a content Management system, users make different accounts with separate roles. These users can add plugins and themes to add functionalities, appearances, and features to their website. (Anon., 2023) (Amsler & Churchville, 2023)

A theme is a template which consist of the visual styles which improves the appearance of a CMS. (Jordana , 2023)

A plugin in a CMS is a coded file used to extend functionality of a CMS. (Anon., 2023)

2.2. Evaluation of Content Management System.

With the scenario given, users can use different CMS to develop the Website. Below are the potential CMSs which users can use to create the website.

2.2.1. Joomla

Joomla is an open-source CMS released in 2005 and works on top of PHP. Joomla follows an object-oriented approach, and a user needs to have PHP and MySQL to use it. Joomla is the second most used CMS of which WordPress is the first. (Anon., 2023)

2.2.1.1. Advantages of Joomla.

2.2.1.1.1. Support

It has a large community of developers who offer support easily when errors have been faced. It also has great documentation which even a beginner can easily grasp on. (Anon., 2023)

2.2.1.1.2. Compatible.

Joomla works in all operating systems whether it's on a Linux OS or Mac and even on windows. Joomla also works with different SQL database system.

2.2.1.1.3. Flexible

Joomla can create various kinds of websites. Some of the websites which can be created include blogs, corporate websites, business websites and many more.

2.2.1.1.4. Secured

Joomla's team of developers works tirelessly to develop and update their security mechanism and users can also use plugins to boost the security of their sites. (Anon., 2023)

2.2.1.1.5. Performance.

Its team of developers regularly releases updates which improves the performance of its site. It also has a built in Caching feature which helps its performance. (Anon., 2023)

2.2.1.2. Disadvantages of Joomla.

2.2.1.2.1. Costly.

Users must pay to use some plugins and themes. When hosting Joomla there are many subscription plans which can be selected from these plans can vary depending on the type of subscription.

2.2.1.2.2. Maintenance.

Requires regular updates to keep it secured and once updated most of the plugins and themes might not work. This will in turn affect the appearance and functionalities which were dependent on the themes and plugins.

2.2.1.2.3. Complexity

Users who uses this CMS must at least have some programming knowledge to use it as many beginners find it hard to use. (Anon., 2023)

2.2.1.2.4. Not so flexible.

Despite being flexible, Joomla can only be used to create websites which are small.

2.2.2. Drupal

Drupal is also a free and open-source CMS which also follows an Object-Oriented Programming of PHP. Drupal first release was in 2001. For someone to use Drupal, they must have PHP, composer and a SQL Database management system.

2.2.2.1. Advantages of Drupal.

2.2.2.1.1. Secured

Drupal's team regularly releases Security patches to fix vulnerabilities. It is one of the most secured CMS on the market. Its security features include user access controls and authentication. Users might also opt. to use third party plugins for its security. (Kiong, 2023)

2.2.2.1.2. Compatibility.

Users on all operating systems must not worry as Drupal is available on all operating systems as long as if the user has PHP and a SQL Database system already installed.

2.2.2.1.3. Flexible

Users can create various kinds of websites with this CMS starting from small websites to big websites. Some of the websites which can be created with Drupal includes blogs, ecommerce sites, corporate websites, business websites and many more.

2.2.2.1.4. Maintenance

Updates are released frequently which can be used to update and upgrade its security and performance.

2.2.2.2. Disadvantages of Drupal.

2.2.2.2.1. Support

Drupal has a small user community. Even through it has a small user community be assured that the people in the community will offer you help. (Pollard, 2023)

2.2.2.2.2. Complexity

Users find it hard to use and install Drupal on their machines. It has a steep learning curve for beginners which might be of disadvantage to new developers. (Anon., 2023)

2.2.2.2.3. Limited Customization

Drupal has limited plugins and themes. These plugins and themes include paid and free plugins and to customize the website itself users find it difficult.

2.2.2.2.4. Time Consuming

Users have to regularly update Drupal, and it can be occupying a lot of time from its users.

2.2.3. DotNetNuke

DotNetNuke (DNN) is an open-source CMS which is based on C#. An Object-Oriented Programming approach is followed, and it was released in 2002. Below are the Advantages and Disadvantages of DotNetNuke. (Anon., 2023)

2.2.3.1. Advantages of DotNetNuke.

2.2.3.1.1. Flexible

It allows users to create many kinds of websites with templates which they can be used to create their sites. Examples of the sites which can be created are Online communities, blogs, ecommerce sites, corporate websites, business websites and many more.

2.2.3.1.2. Support

It has a large community of developers who are always willing to help. It also has a lot of Documentation which can be easily followed.

2.2.3.1.3. Secured

Its core system is very secured and doesn't require user to rely on third party security plugins.

2.2.3.1.4. Maintenance

Its team of developers frequently releases patches and other updates.

2.2.3.2. Disadvantages of DotNetNuke.

2.2.3.2.1. Incompatible

It is only available for windows users only. Users in other operating systems might chose to work with virtual environments for windows in their different OS but the experience is not the same as in a windows OS.

2.2.3.2.2. Resource Intensive

It requires many other Software's to run on and these software's require a lot of space and ram to run properly. These software's include Visual Studio, SQL Server management studio, Dotnet and a windows server. These will occupy a lot of space and ram.

2.2.3.2.3. Poor Performance

As already explained that in needs much software's to run on, this in turn affects the performance by slowing down the platform.

2.3. Weight Score Model.

A weight score model is a quantitative method of evaluating multiple options based on multiple criteria. It involves multiple tasks which include identifying the options, listing the criteria, assigning scores to the criteria, and analyzing the score. (Scholz, 2023) (Romanelli, 2023)

Figure 2.2.3.1 is a table showing the scoring range for the weight scoring range.

Score Range	
Excellent	7 to 10
Good	4 to 6
Average	1 to 3

Figure 2.2.3.2 is a table showing the criteria, options, scores, and the weighted scores.

	Security	Performance	Flexible	Support	Maintainance	Compatibility	Complexity
Weight(%)	18%	17%	11%	15%	15%	10%	14%
Joomla Score	6	7	6	5	4	7	5
Joomla Weighted Score	1.08	1.19	0.66	0.75	0.6	0.7	0.7
Drupal Score	9	6	8	7	6	7	4
Drupal Weighted Score	1.62	1.02	0.88	1.05	0.9	0.7	0.56
DotNetNuke Score	7	2	6	3	6	3	6
DotNetNuke Weighted Score	1.26	0.34	0.66	0.45	0.9	0.3	0.84

Figure 2.2.3.3 is a column bar chart representing the comparison between different options criteria.

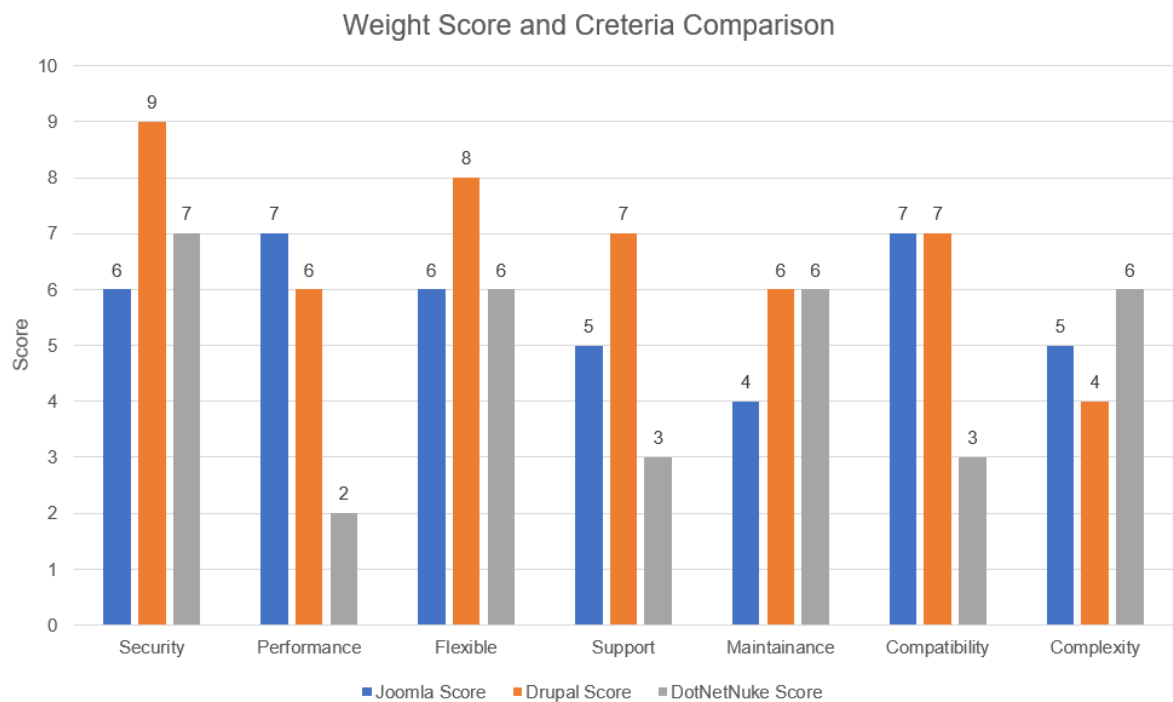
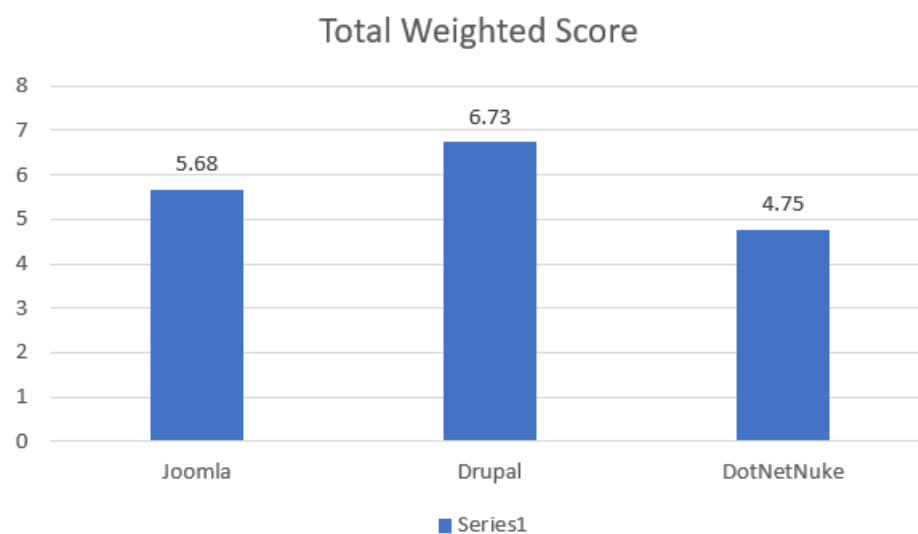


Figure 2.2.3.4 is a table showing the total weighted score of each option.

Total Weighted Score	
CMS Name	Total
Joomla	5.68
Drupal	6.73
DotNetNuke	4.75

Figure 2.2.3.5 is a bar chart showing the weighted score model scores.



2.4. Conclusion

Based on the weighted score model, the CMS which seems best suited for this project is Drupal. Even though Drupal has a steep learning curve, limited plugins, and themes, it has still been chosen because it offers the best security and its community which consist of free and paid resources and easily offers support to its users.

3. Evaluation of product and design process of the recently built CMS.

3.1. Website Design.

Below are some of the Design Principles which have been applied to all pages.

White and black font colors have been consistently used throughout the designing of the website. Grey and white colors have also been interchangeably used as the background colors. Same fonts and font sizes have been used for headings, subheadings, and paragraphs.

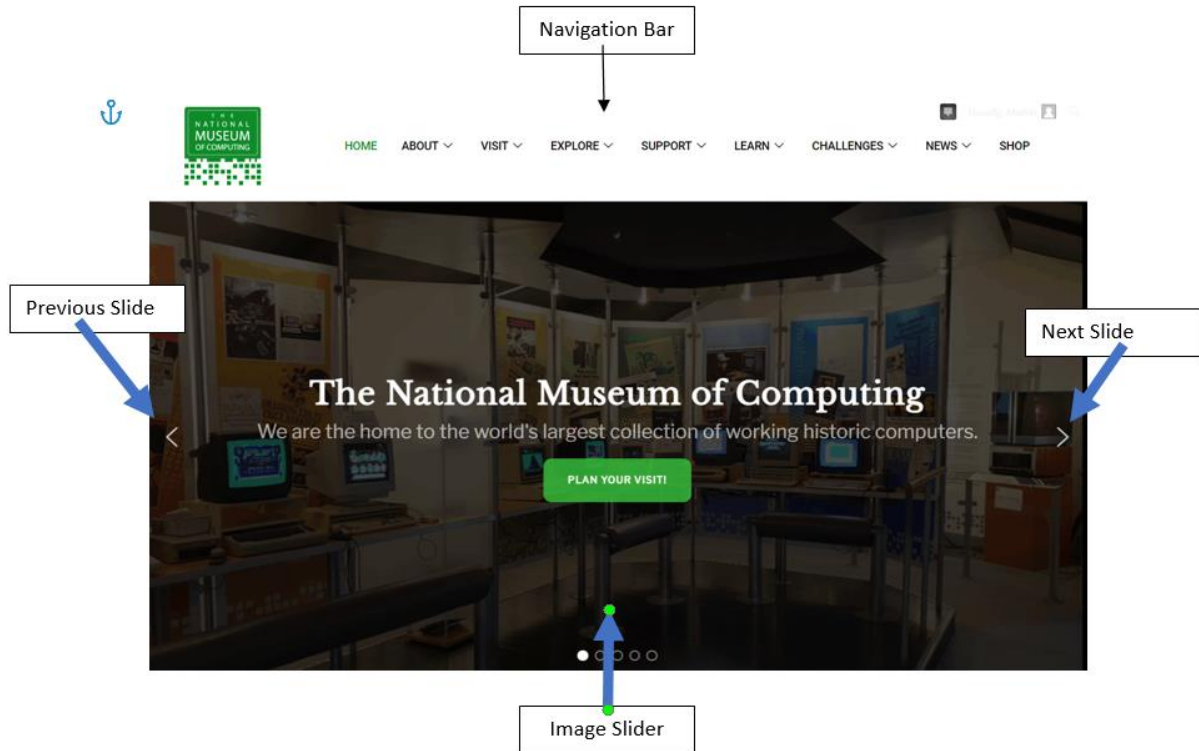
Input fields, checkboxes and radio buttons affords input insertion and buttons, icons and link labels afford clicking.

All the webpages consist of a header which provides feedback the visitor. A dark overlay color has been applied in all headers to make the text visible. The text in all headers is white.

3.1.1. Home Page

This is the page which users will be seeing after a successful Login. On the original website the header of the home page had a gif with home words written on top. Below are the sections of the home page.

Figure 3.1.1.1 is an image showing the websites home page header section.



An image slider with a dark overlay color has been added to increase the visibility of the text on top.

Figure 3.1.1.2 is an image showing the website's home page museum's description section.

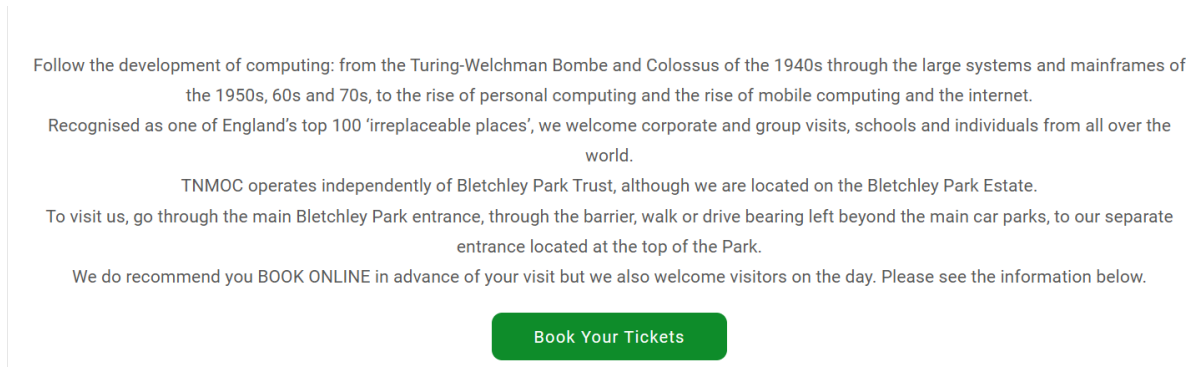


Figure 3.1.1.3 is an image showing the home page plan your visit section.

PLAN YOUR VISIT

Family Visits



Why not plan a visit to our world leading computing museum? We offer individual, family and annual tickets and we are easy to reach by public transport or car.

Corporate & Group Visits



Whether you are a business organisation or a private group of friends, we tailor your group visit to fit your requirements, including time, and you will benefit from the knowledge of one of our highly experienced, trained tour guides.

Figure 3.1.1.4 is an image showing the home page partners section.



This section was included in the footer section in the original website and in the clone website the section has been separated.

3.1.2. About Our Museum Page.

This page consists of more information about the museum. Below are the images of the about our museum page sections.

Figure 3.1.2.1 is an image of the about us page header section.

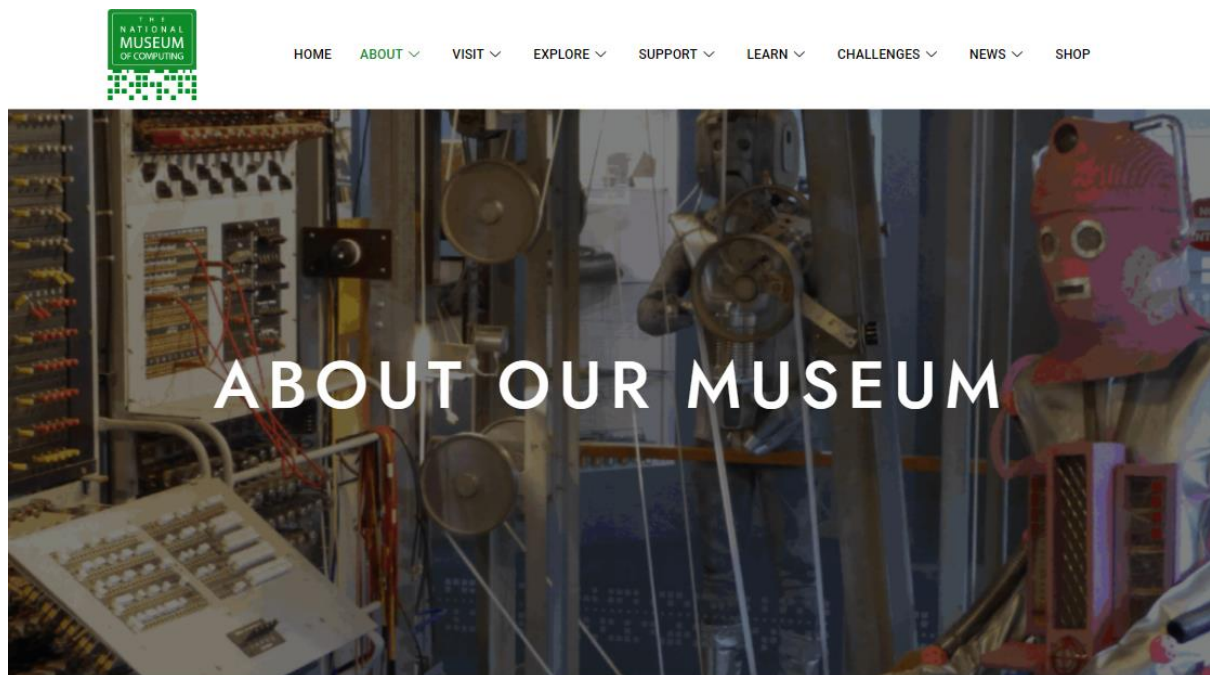


Figure 3.1.2.2 is an image of the about us page about us section.

About Us

The National Museum of Computing, located on Bletchley Park, is an independent charity housing the world's largest collection of functional historic computers and WW2 machines, including, Enigma, Lorenz the working Turing-Welchman Bombe, the rebuilt Colossus, the world's first electronic computer, and the WITCH, the world's oldest working digital computer. The museum enables visitors to follow the development of computing from the ultra-secret pioneering efforts of the 1940s through the large systems and mainframes of the 1950s, 60s and 70s, and the rise of personal computing in the 1980s and beyond.

The museum runs a highly successful Learning Programme for schools and colleges and promotes introductions to computer coding amongst young people, especially females, to inspire the next generation of computer scientists and engineers.

Figure 3.1.2.3 is an image of the about us page our mission section.

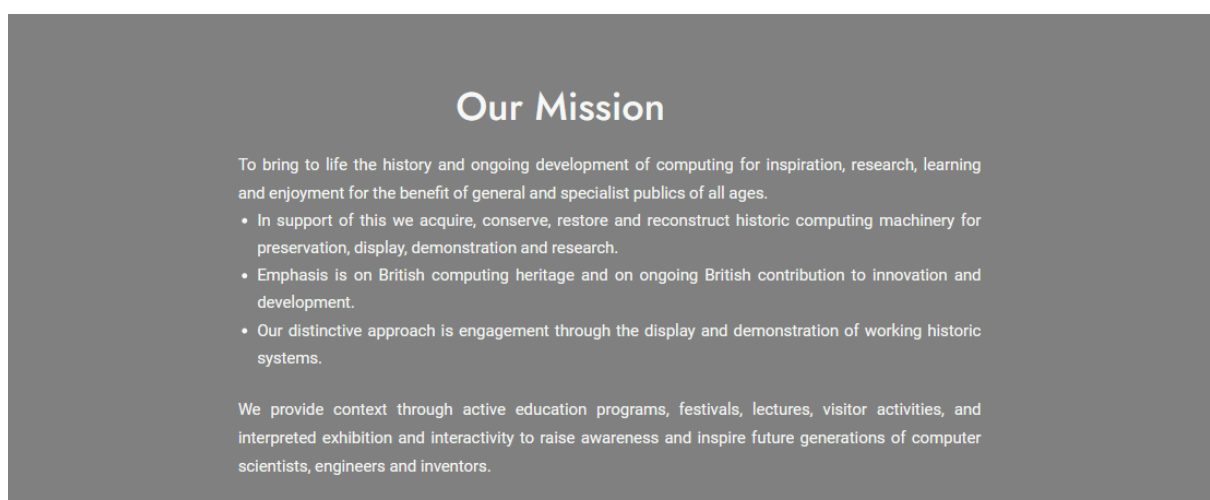
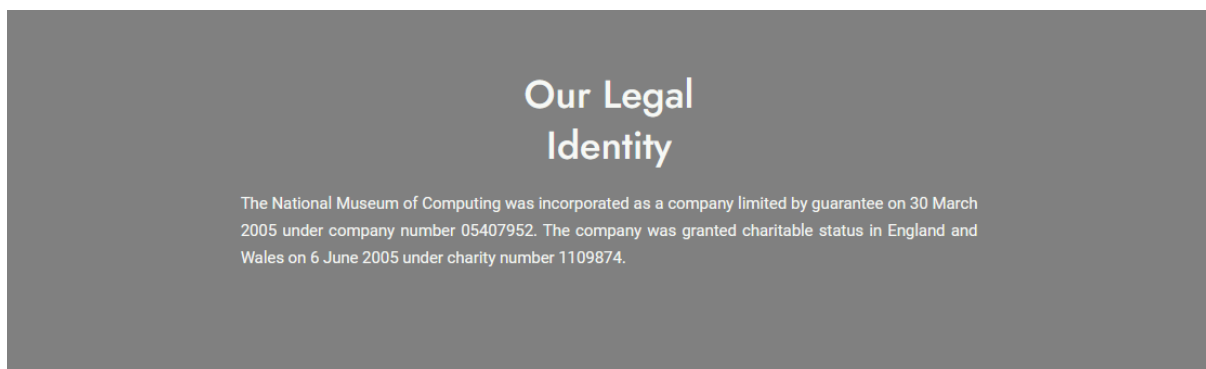


Figure 3.1.2.4 is an image of the about us page relationship with Bletchley Park section.



Figure 3.1.2.5 is an image of the about us page legal identity section.



3.1.3. Events Page

The events page will be the page where The National Museum of computing staff will be adding events. Visitors can add an in vent to their calendar by clicking subscribe to calendar button and user can change the displays or search for an event. On the original page visitors were unable to change the display since the only display is the calendar display and the visitors were unable to search for events.

Figure 3.1.3.1 is an image showing the events page.

The screenshot shows the 'Events' page of the National Museum of Computing. At the top is a navigation bar with links: HOME, ABOUT, VISIT, EXPLORE, SUPPORT, LEARN, CHALLENGES, NEWS, and SHOP. Below the navigation bar is a large 'Events' heading. A message states: 'It seems we can't find what you're looking for. Perhaps searching can help.' Below this is a search bar with the placeholder text 'Search for events:' and a blue 'Find Events' button. To the right of the search bar are three tabs: 'List', 'Month', and 'Day', with 'Month' being the active tab. An arrow points from a box labeled 'Event options' to the 'Month' tab. Below the tabs is a calendar for 'November 2023'. The calendar grid shows dates from 30 to 3. Specific events are listed for certain dates: November 17 (9:30 am - 1:30 pm: Digital Future Days, LGBTQ+ STEM Day (15-18 years)), November 18 (9:30 am - 5:00 pm: BBC / Acorn Fashion weekend), and November 29 (9:30 am - 9:30 pm: TNMOC Virtual Talk: Alan Burdett-Gray). At the bottom right of the calendar area is a button labeled 'Subscribe to calendar'. An arrow points from a box labeled 'Button to add the events to visitors' calendars.' to this button.

Event options

Search for events: Find Events List Month Day

< > This Month November 2023

MON	TUE	WED	THU	FRI	SAT	SUN
30	31	1	2	3	4	5
October 31 (Public Holiday)						
6	7	8	9	10	11	12
October 12 (Public Holiday)						
13	14	15	16	17 9:30 am - 1:30 pm Digital Future Days, LGBTQ+ STEM Day (15-18 years)	18 9:30 am - 5:00 pm BBC / Acorn Fashion weekend	19
20	21	22	23	24	25	26
27	28	29 9:30 am - 9:30 pm TNMOC Virtual Talk: Alan Burdett-Gray	30	1	2	3

Subscribe to calendar

Button to add the events to visitors' calendars.

3.1.4. Donations Page

This page is the page where users will be viewing the about of the donation and make new donations. Below are the sections of the donation page.

Figure 3.1.4.1 is an image of the donation page header section.

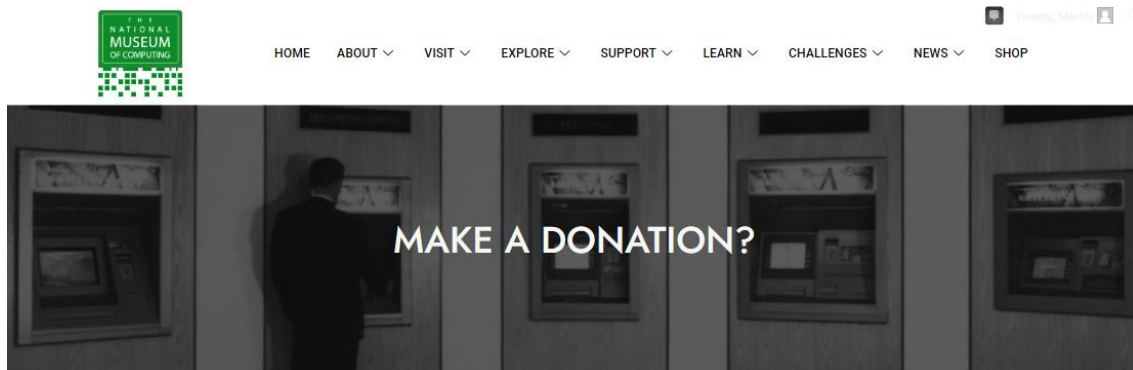
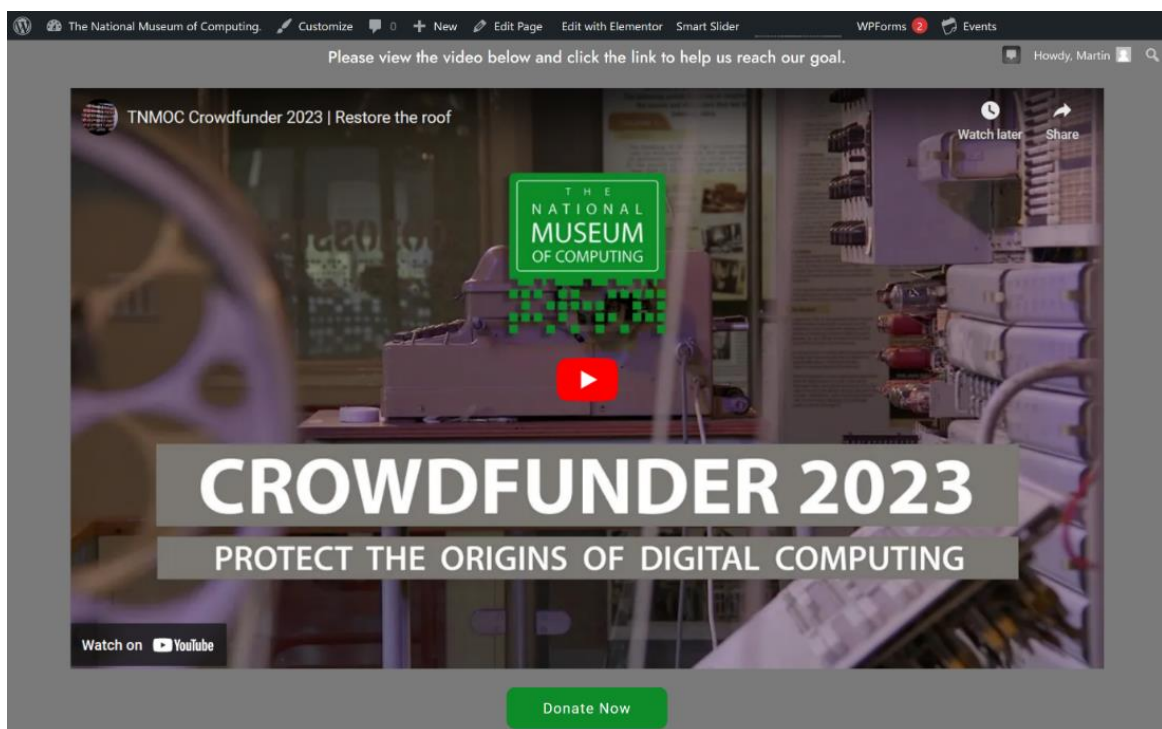


Figure 3.1.4.2 is an image showing the donate button.



Visitor can click the donate now button to donate.

Figure 3.1.4.3 is an image showing the support our cause page.

Donation

Support Our Cause

Help our organization by donating today! All donations go directly to making a difference for our cause.

\$2,760 Raised	8 Donations	\$10,000 Goal
-------------------	----------------	------------------

\$2,760 amount

\$10,000 amount

Donate Now →

Secure Donation

In the above image, visitors can see the feedback by seeing the donated amount, number of donations and the progress bar. To continue click the button. On the original website visitors were only seeing the donated amount and the number of donations.

Figure 3.1.4.4 is an image showing the page where users will be selecting the amount to donate.

←

Choose Amount

How much would you like to donate? As a contributor to The National Museum of Computing, we make sure your donation goes directly to supporting our cause.

Donation Amount *

USD \$

\$10.00

\$25.00

\$50.00

\$100.00

\$250.00

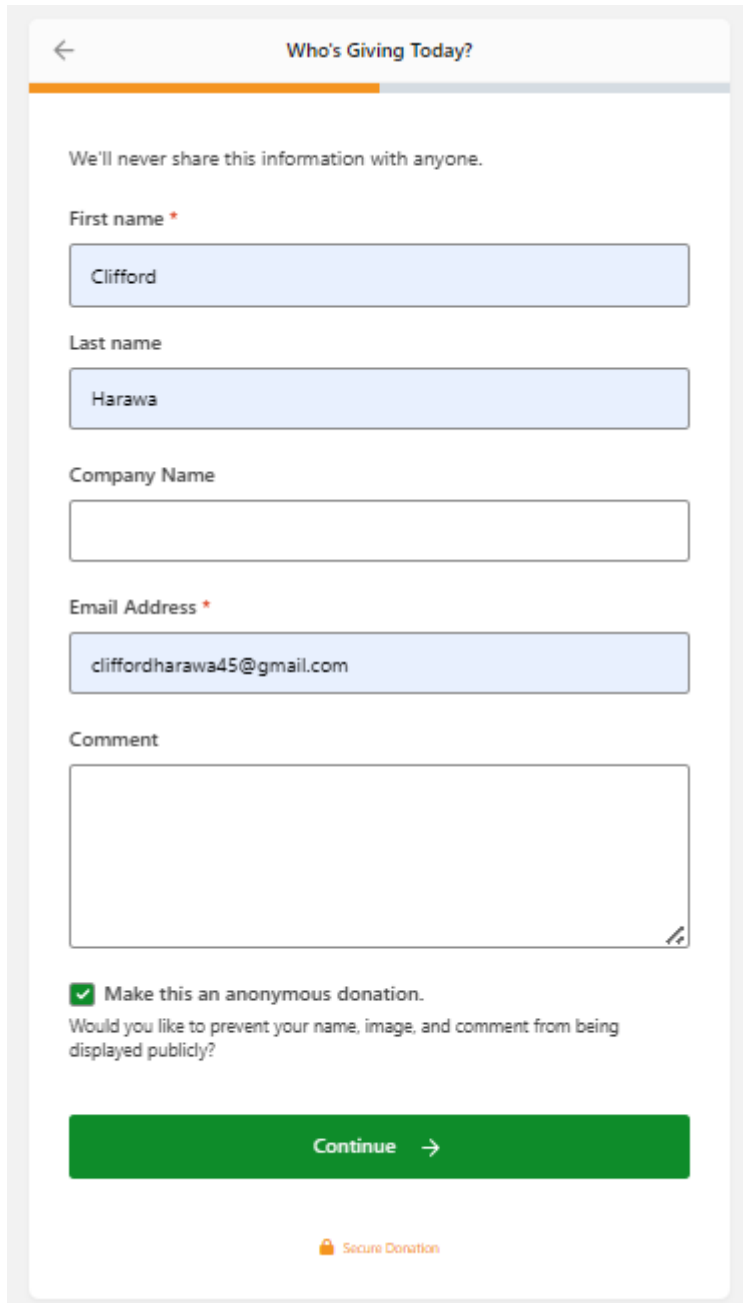
Enter custom amount

Continue →

Secure Donation

Visitors can select or enter an amount to donate and then after click continue button to continue.

Figure 3.1.4.5 is an image showing the page where users can enter their information.



The screenshot shows a mobile app interface for a donation page titled "Who's Giving Today?". At the top, there is a back arrow and the title. Below the title, a message states: "We'll never share this information with anyone." The form contains several input fields: "First name *" with the value "Clifford", "Last name" with the value "Harawa", "Company Name" (empty), "Email Address *" with the value "cliffordharawa45@gmail.com", and a "Comment" text area. Below the comment field, there is a checkbox labeled "Make this an anonymous donation." which is checked, followed by the text "Would you like to prevent your name, image, and comment from being displayed publicly?". At the bottom of the form is a large green "Continue" button with a right arrow. Below the button, there is a small lock icon and the text "Secure Donation".

Figure 3.1.4.6 is an image showing the page where visitors can select the type of donation their want to make.

←

Who's giving today?

We'll never share this information with anyone.

Donation Summary

Payment Amount

\$100.00

Giving Frequency

One time

Donation Total

\$100.00

Test mode is **enabled**. While in test mode no live donations are processed.

Donate with Test Donation

Test GiveWP with the Test Donation Gateway

How it works:

There are no fields for this gateway and you will not be charged. This payment option is only for you to test the donation experience.

Donate with Offline Donation

Agree to terms? *

The terms can be customized in the donation form settings.

Donate Now

Secure Donation

Users will be constrained to use a test or offline donation.

Figure 3.1.4.7 is an image showing the page visitors can see their payment details.

21 | Page

Success!

A great big thank you!

Clifford, your contribution means a lot and will be put to good use in making a difference. We've sent your donation receipt to cliffordharawa45@gmail.com.

Donor Details

Donor Name

Clifford Harawa

Email Address

cliffordharawa45@gmail.com

Donation Details

Payment Status

Completed

Payment Method

Test Donation

Donation Amount

\$100.00

Donation Total

\$100.00

Additional Details

Anonymous Donation

Yes


[Go to my Donor Dashboard](#)

Above is the feedback after finalizing the donation. If the Donor wishes to see the donor's dashboard, they can click the go to my donor dashboard which will open a popup.

Figure 3.1.4.8 image below is the popup which appears after clicking the go to my donor dashboard link.

Log in to see your donor dashboard

For privacy, enter the email address used to make a donation below and we'll send you a link to access your donor dashboard.




Verify Email >

After clicking the Verify Email button a link will be sent to the visitors email address where the visitor can view the donor dashboard.

Figure 3.1.4.9 is an image showing the page where visitors can view recent donations.

Donor Dashboard



Last donated 2 hours ago

Donor for 2 weeks

Dashboard

Donation History

Edit Profile

Logout

Your Giving Stats

10

NUMBER OF DONATIONS

\$2,760

LIFETIME DONATIONS

\$276

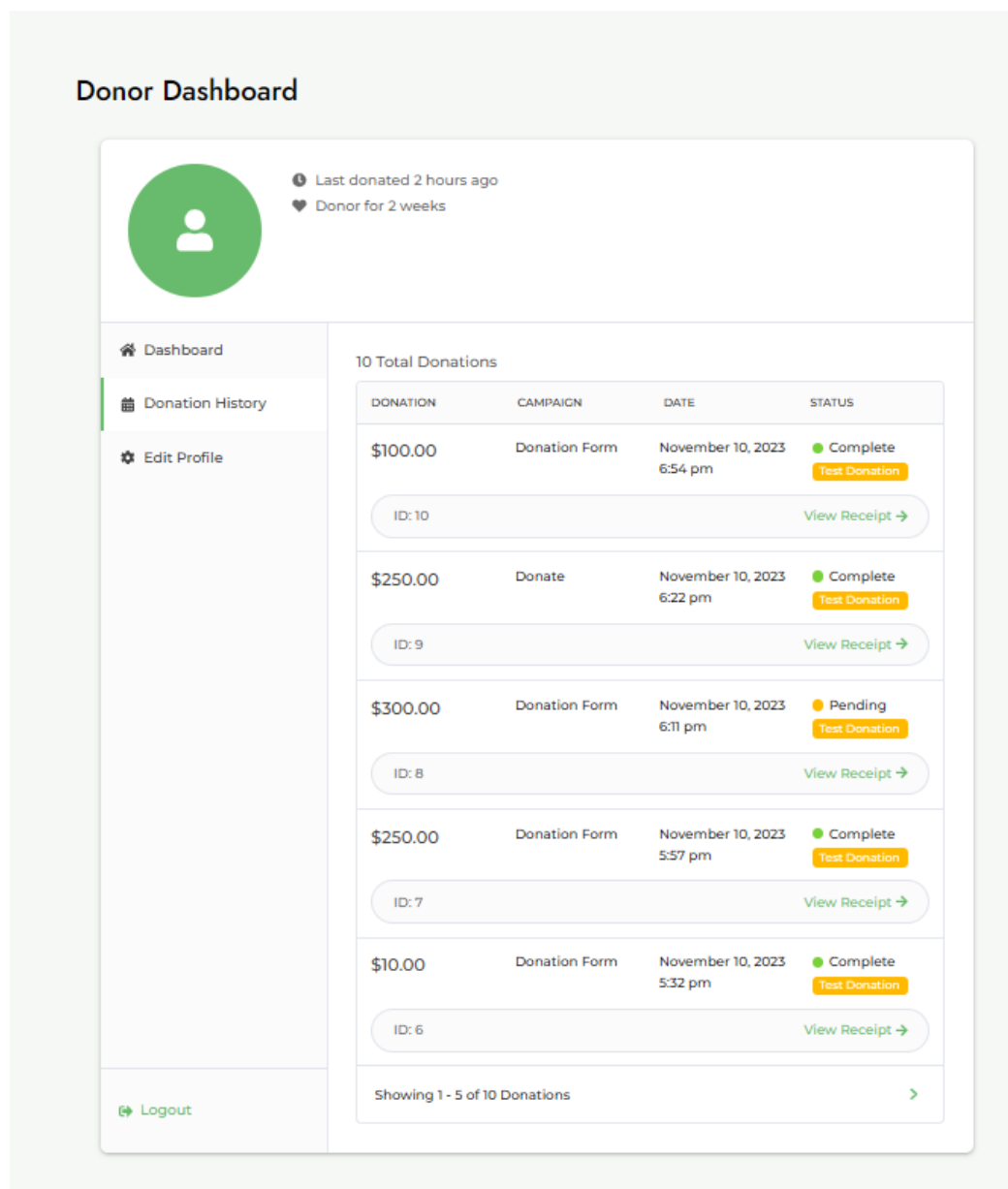
AVERAGE DONATION

Recent Donations

DONATION	CAMPAIGN	DATE	STATUS
\$100.00	Donation Form	November 10, 2023 6:54 pm	Complete Test Donation
ID: 10			View Receipt →
\$250.00	Donate	November 10, 2023 6:22 pm	Complete Test Donation
ID: 9			View Receipt →
\$300.00	Donation Form	November 10, 2023 6:11 pm	Pending Test Donation
ID: 8			View Receipt →

Showing 1 - 3 of 10 Donations >

23 | Page



3.1.5. Contact Us Page

This page allows users to ask or view the organizations contact information. This page main function is to allow visitors to view the museums contact information and send questions to the museum. The original website doesn't have a form where visitors can send questions, but it has the contact us page with emails and phone numbers.

Figure 3.1.5.1 is an image of the contact us page header section.

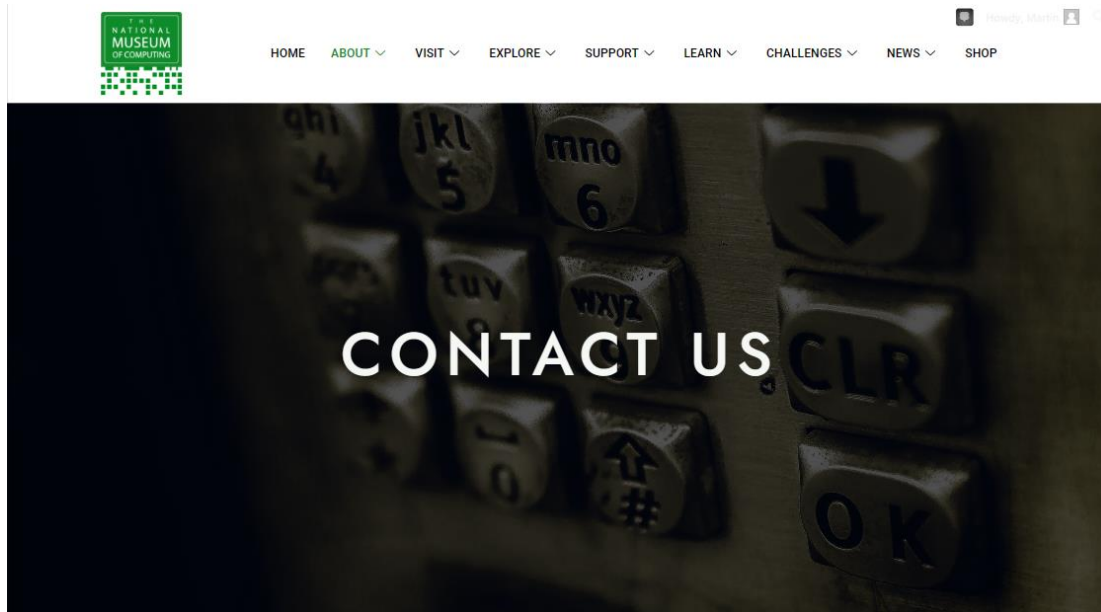


Figure 3.1.5.2 is an image of the contact us page contact info section.

Find Us

Visit Us
The National Museum of Computing, Block H,
Bletchley Park, MILTON KEYNES, MK3 6DS

Call Us
• +44 (0)1908 374708
• +44 (0)208 819 3170

Email Us
• education@tnmoc.org
• Jacqui.Garrad@tnmoc.org
• Aneesa.Riffat@tnmoc.org
• tnemoc@resonancecrowd.com
• operations@tnmoc.org

Get in touch.

Your Name *

Email *

Subject *

Message

SEND NOW

To submit questions visitors can use the form on the right.

Figure 3.1.5.3 is an image of the contact us page contact form with filled data.

Find Us



Visit Us

The National Museum of Computing, Block
H, Bletchley Park, MILTON KEYNES, MK3
6DS



Call Us

- +44 (0)1908 374708
- +44 (0)208 819 3170



Email Us

- education@tnmoc.org
- Jacqui.Garrad@tnmoc.org
- Aneesa.Riffat@tnmoc.org
- tnmoc@resonancecrowd.com
- operations@tnmoc.org

Get in touch.

Your Name *

Dalisto Harawa

Email *

dalistomartin@gmail.com

Subject *

Do you offer online classes.

Message

I wanted to know if you offer online classes to the people who live
outside England.

SEND NOW

Figure 3.1.5.4 is an image of the contact us page feedback which appears after submitting the question.

Find Us



Visit Us

The National Museum of Computing, Block
H, Bletchley Park, MILTON KEYNES, MK3
6DS



Call Us

- +44 (0)1908 374708
- +44 (0)208 819 3170



Email Us

- education@tnmoc.org
- Jacqui.Garrad@tnmoc.org
- Aneesa.Riffat@tnmoc.org
- tnmoc@resonancecrowd.com
- operations@tnmoc.org

Get in touch.

Thanks for contacting us! We will be in touch with you shortly.

Figure 3.1.5.5 is an image of the contact us page map section.



3.1.6. Shop Page

This page will have all the products which the organization is selling. The main function of this page is to allow visitors to buy products from the museum. It consists of two sections, and below are the sections.

Figure 3.1.6.1 is an image showing the shop page header section.

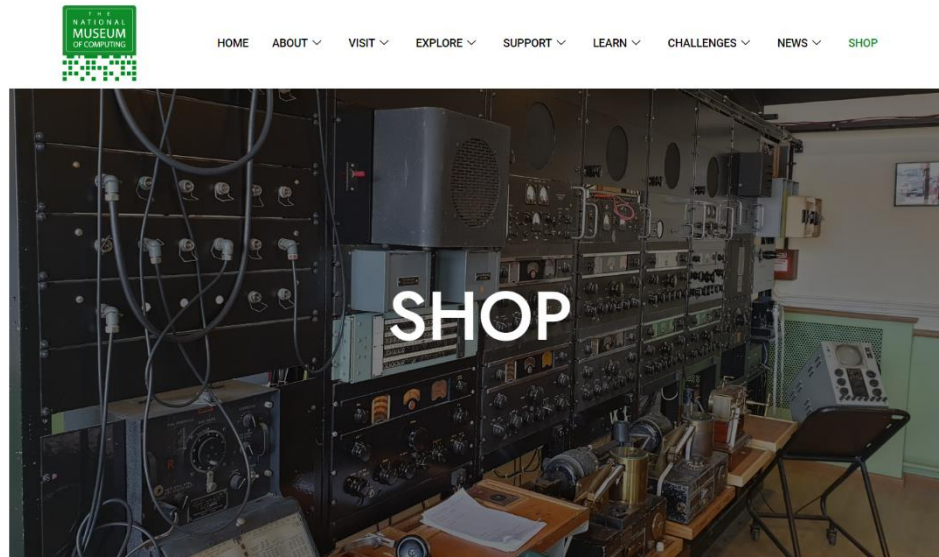
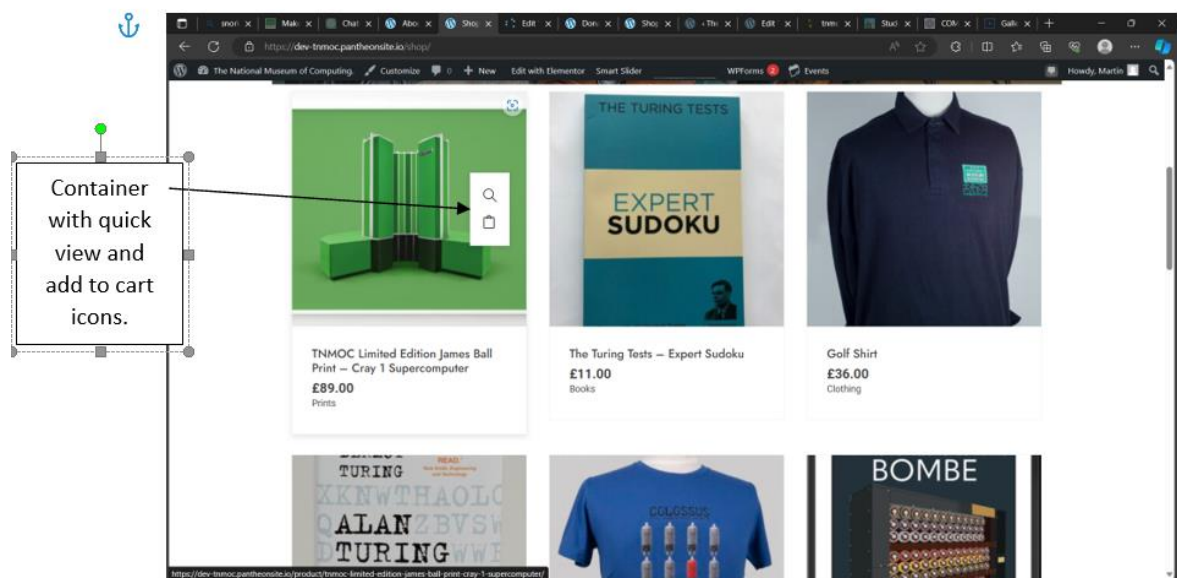
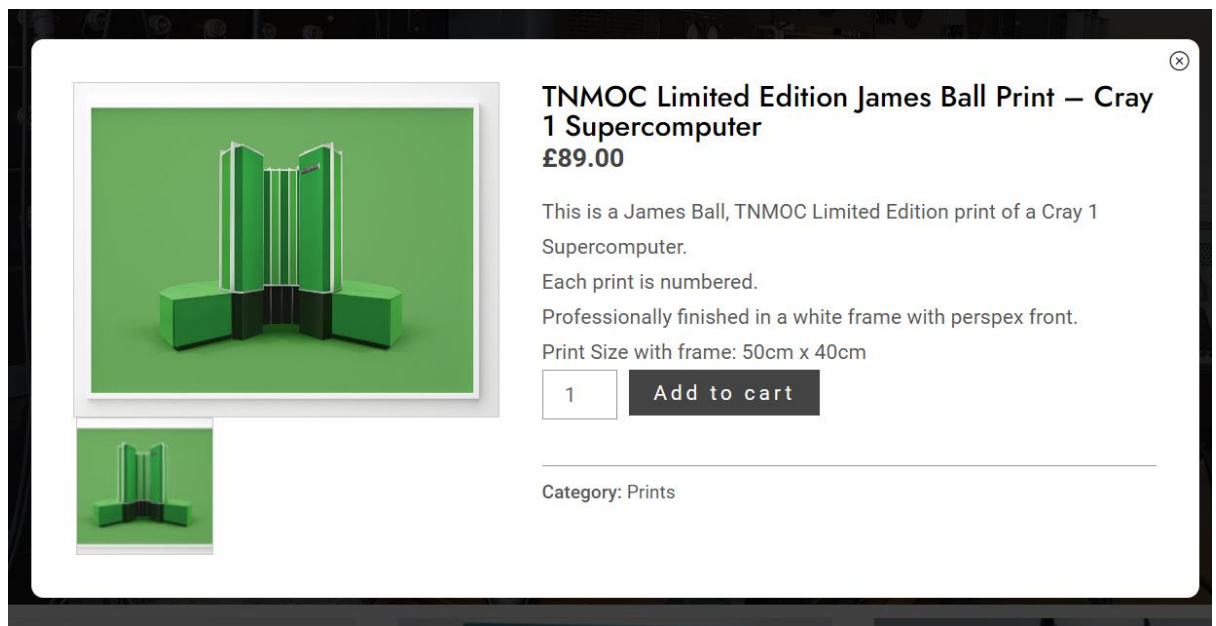


Figure 3.1.6.2 an image showing the shop page product section.



If a visitor hovers over a product a container with the quick view and add to cart icons will appear.

Figure 3.1.6.3 an image showing the shop page quick view section.



3.2. Challenges.

3.2.1. Limited knowledge in WordPress.

Some of the features were taking time to implement due to limited knowledge in WordPress and its plugins.

3.2.2. Limited time and resources.

A good performing laptop and an internet connection weren't available at first and when they were available the time which was remaining was short.

3.2.3. Free Plugin Reliance.

All the plugins which have been used are free and these plugins have limited functionalities.

3.3. Strength and Weakness

3.3.1. Strength

3.3.1.1. *Responsive*

The website has been developed to work on all devices with different screen sizes ranging from small to large devices.

3.3.1.2. *Usability.*

When developing the website, design principles were followed, and these make a website easy and enjoyable to use.

3.3.1.3. *Informative*

The website offers much information related to the museum, the donations, events, and shop pages hold information about the museum.

3.3.2. Weaknesses and solutions.

3.3.2.1. *Security*

The developed website is not secured since the used plugins are free and changing to premium plugins can help.

3.3.2.2. *Limited functionality.*

The designed website has limited functionalities in some pages because the used plugins and themes are the free version which offers limited features.

4. Governance Recommendations

Governance in a Content Management System refers to how a website can be maintained and managed by following structures, strategies, and policies. If the below governance recommendations have been followed by the people and how they manage their resources, it can lead to a secure and a good performing website.

4.1. Complying to policies, standards, and strategies.

Policies are documented rules which are applied and help by managing the site. Standards are principles that makes sure the website quality is consistent, secure, and accessible. Strategies are guidelines put in place to enforce policies and standards.

The museum will be encouraged to make policies and procedures of how the site should be managed.

Visitors and the organizations staff will not be allowed to comment offensive and hate speeches on the donation and contact us page. Visitors' will be accepting the privacy policy before creating an account with the website. English is the only language which will be used in the comment section.

4.2. Staff Training

Training museums all museum staffs make sure that all stakeholders are made aware of the policies and procedures of managing the site. This can improve staff's productivity, site performance and security of the website if followed. Museums staff will be trained according to their roles.

4.3. Regularly Updating

WordPress team of developers releases updates frequently, it is important to keep it up to date because these updates help to improve security, performance and solves some compatibility issues of the website. Plugins and Themes should be updated frequently. Currently the site is up to date. The website has been set to auto update every time there is an update for WordPress or the plugins and themes. (Anon., 2023)

4.4. Backing Up Data

This recommendation makes sure that data is always available, and the data should be easily recovered either after a natural disaster or after a cyberattack. This can help the museums website to keep on running even after facing some challenges. To help with this, opting for hosting sites with backup options or installing plugins which have an auto backup feature. The two ways can make sure that the data is always properly backed and if the museum faces a challenge the backups can be recovered and ready to use within a short period.

4.5. Access Control Mechanism

Different roles have been put in place to make sure that the right roles are doing what there are responsible of. The roles and responsibilities have been clearly defined and the roles which the developed site have are shown in the figure below with their permissions.

In the figure, the Administrator have been given full control to the website where the administrator can manage post, products, donations, pages and themes and themes and plugins. Then a shop manager and GiveWP manager have also full control of the shop and the donation respectively.

An author and editor have full control of post, but an editor can only manage post made by them while an author can manage all post made by them or made by an editor. Customer, GiveWP Donor, and subscriber can only read post, donate, and buy things from the shop and a subscriber can also subscribe to the sites newsletter. All the users in the site can donate, buy products, and read post.

Other roles include GiveWP accountant and Contributor. The GiveWP role can generate the reports for the donation and a contributor can create and edit their post.

Figure 3.3.2.1 is a table showing the different roles and the responsibility of each role.

		Administrator	Author	Editor	Contributor	Customer	GiveWP Accountant	GiveWP Donor	GiveWP Manager	Shop Manager	Subscriber
Post	Create	Yes	Yes	Yes	Yes	No	No	No	No	No	No
	Edit	Yes	Yes	Yes	Yes	No	No	No	No	No	No
	Read	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Publish	Yes	Yes	Yes	No	No	No	No	No	No	No
	Delete	Yes	Yes	Yes	No	No	No	No	No	No	No
Shop Products	Create	Yes	No	No	No	No	No	No	No	Yes	No
	Edit	Yes	No	No	No	No	No	No	No	Yes	No
	Buy	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Publish	Yes	No	No	No	No	No	No	No	Yes	No
	Delete	Yes	No	No	No	No	No	No	No	Yes	No
Plugins	Install	Yes	No	No	No	No	No	No	No	No	No
	Update	Yes	No	No	No	No	No	No	No	No	No
	Delete	Yes	No	No	No	No	No	No	No	No	No
Donation	Donate	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
	Create	Yes	No	No	No	No	No	No	Yes	No	No
	Publish	Yes	No	No	No	No	No	No	Yes	No	No
	Edit	Yes	No	No	No	No	No	No	Yes	No	No
	Report	Yes	No	No	No	No	Yes	No	Yes	No	No
	Delete	Yes	No	No	No	No	No	No	Yes	No	No

5. Search Engine Optimization Strategies.

5.1. Description

Search Engine Optimization or SEO means ways of trying to rise the visibility of a website to different searching engines every time when users want something from a website. There are many search engines in the world and here are some of the most used search engines google, Microsoft Bing, Yahoo, Baidu, and DuckDuckGo.

Whenever a user is searching for products, services, and information about something the above search engines use bots and crawlers to examine and capture all the most important web pages and then these are indexed. The search engine uses algorithms to rank the indexed results which are then presented to the user.

For crawlers and bots to be able to examine the web pages different SEO Strategies are used to help, in the below section are the strategies.

5.2. Strategies

SEO Strategies are the guidelines which can be followed to make a website more visible to users and clients. Below are the strategies which can be used to make The National Museum of computing website more visible.

5.2.1. On-site Optimization

In an on-site optimization, the html code and the page content are optimized but only for a single page or each page separately. Good On-site Optimization helps search engines to easily and quickly understand if the webpage holds the information searched. Below are some of the ways content can be optimized on-site. (Anon., 2023) (Anon., 2023)

5.2.1.1. Original Content

Creating original content which can be easily read by crawlers, bots, and humans and to prevent plagiarism and copyright issues. Creating original content increases credibility and can improve search ranking of the web page.

5.2.1.2. Keyword Research

Analyzing what people search for when they want to find a website. Understanding the keywords which people use can help the museum's website to have many visitors and some of the keywords people might use to find the website might include computing museum, IT museum, computer history museum and technology museum.

5.2.1.3. Meta description.

Adding meta description and clear and short alternative (alt) tag when adding images. In the developed website these have been included and below are the images of how they have been included.

Figure 5.2.1.1 is an image showing the logo alt text with its title, description, caption, and link to the website.

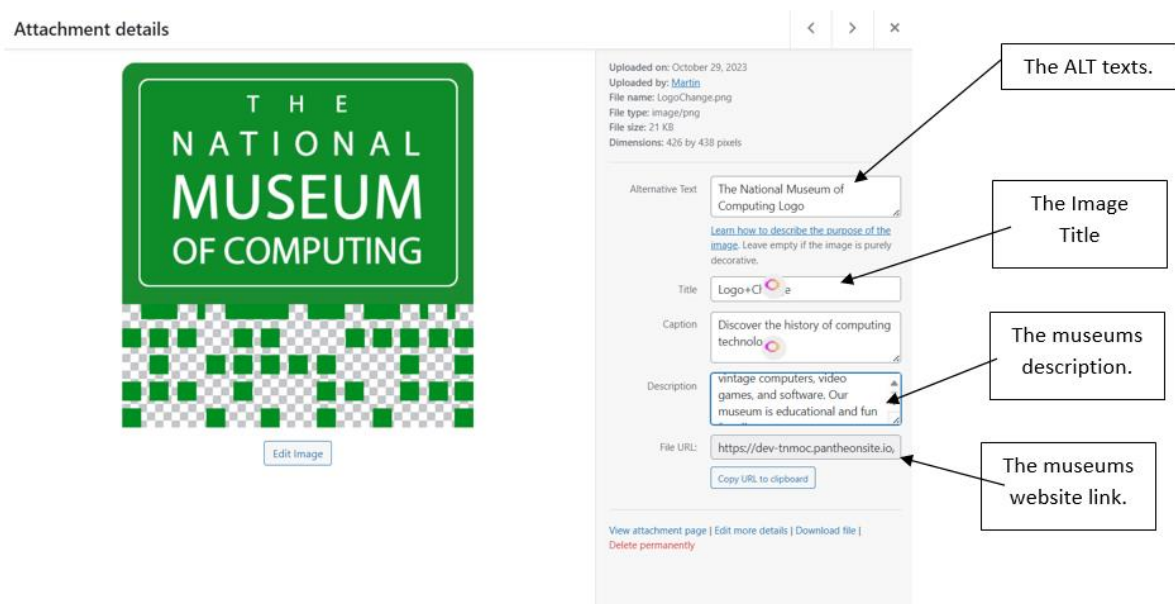
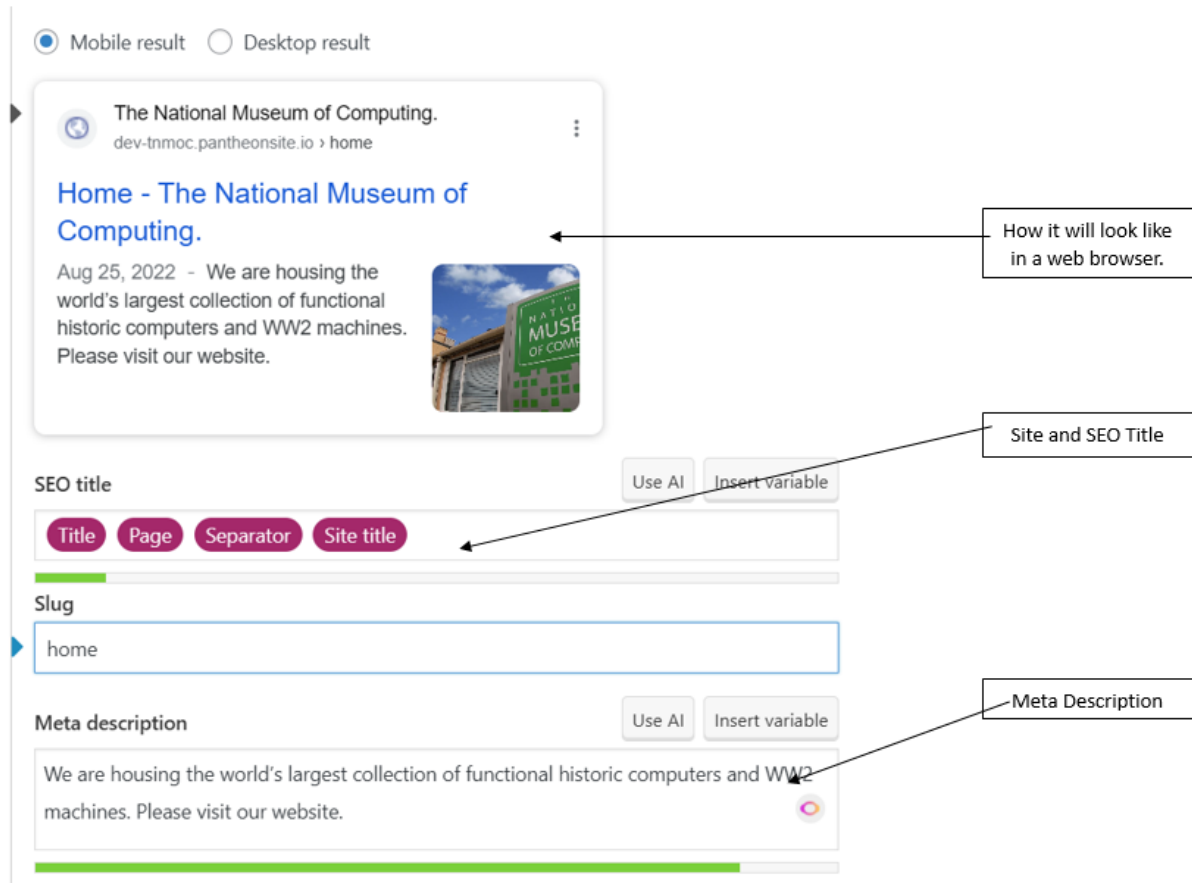


Figure 5.2.1.2 is an image showing the meta description of the home page.



5.2.1.4. Accessible

Making the webpage accessible for all people. To help with this SEO alt tags have been added to images, English is the only language used on the website, headings have been used, and color contrast have also been used.

5.2.2. Off-site Optimization

Off-site optimization are actions performed outside the website to increase traffic on a webpage. The below activities can be taken by The National Museum of computing to increase the ranking of their website. At this stage the below activities have not been carried out. (Anon., 2023)

5.2.2.1. Advertising the website of popular social media platforms can increase awareness of the site. These social media platforms can be Facebook, Instagram, YouTube, and X.

5.2.2.2. Contacting similar webpages owners to link their site to the one built. If a webpage has been linked to many pages, it is regarded as relevant with the search engines.

- 5.2.2.3. Reaching out to influencers who have many followers to provide feedback and review the website can build credibility and
- 5.2.2.4. Online Forum participation by answering questions and providing feedback to questions which are like the website built can increase awareness. These forums can be Quora, yahoo and similar forums.
- 5.2.2.5. Creating social media accounts for the museum and linking them with this site. Linking google map and other map service providers to the website.

5.2.3. Technical Optimization

Technical SEO Optimization looks at the technical aspects which can be implemented to make the webpages to be easily crawled by crawlers. Below are some of the ways to improve the technical aspects of the website. (Anon., 2023) (Anon., 2023)

- 5.2.3.1. Developed responsive webpages which works on small screen devices to large screen devices.

Figure 5.2.3.1 is a figure showing the website on a small screen device.

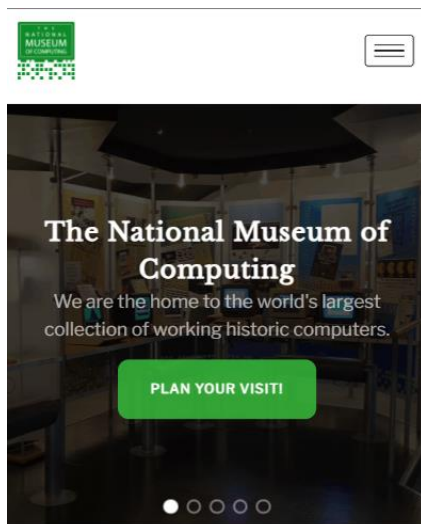


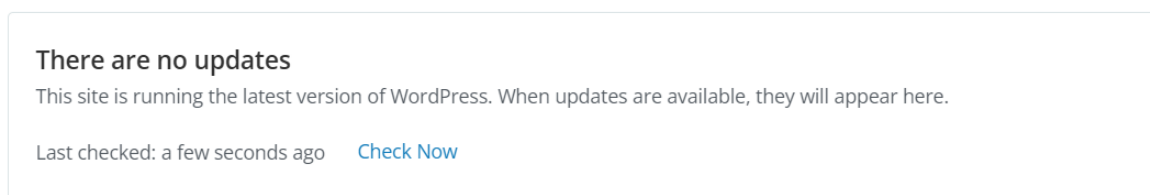
Figure 5.2.3.2 is an image showing the website on a medium size device.



5.2.3.2. Slow websites make the visitors experience with the website annoying hence it is good to make the website fast. Optimizing images, caching the website, and using CDN might improve the website speed and visitors experience. This has not been done to the website.

5.2.3.3. Updating the CMSs and its plugins and themes to improve security and performance of the website. Currently the site is running on the latest version which is 6.4.1.

Figure 5.2.1.4.1 is an image showing that WordPress is running on the latest version.



5.3. Importance of Search Engine Optimization

SEO can have the following importance's on The National Museum of Computing and below are the importance's.

5.3.1. Responsive and good performing sites can improve the experience of the visitors with the site and most likely the visitors will recommend the site to their friends.

5.3.2. If the above strategies are followed, then the site will have more organic traffics.

5.3.3. By following the above strategies trust, recognition and credibility can be built easily.

5.3.4. Competitive advantage compared to other similar sites. If the strategies have been carefully followed the site will be easily recognized by bots and crawlers.

(Anon., 2023)

6. Conclusion and Recommendation.

6.1. Conclusion

In conclusion WordPress was used to develop the museum because it has a big community of users for support, easy to use and learn and unlimited plugins and themes for customization. Despite having the above advantages, WordPress doesn't have the best inbuilt security mechanism and to boost the security, plugins can be used of which there might be costly.

Drupal as already explained in section 2 it has the best inbuilt security and it also offers multilingual features which can only be found by using WordPress plugins in WordPress. Despite Drupal having the above advantages, it wasn't selected for the development of the museums site because of its complexity and limited plugins compared to WordPress. On the other hand, WordPress was selected because it is user friendly, and it has many plugins and themes which makes the customization easier. Plugins have been used to booster the security of the site.

WordPress has also been used because the developed site is for a medium sized organization and the organization doesn't store and information which hackers can use to threaten the organization.

6.2. Recommendations.

6.2.1. Opting for premium plugins and themes.

In the current built website, free plugins and themes have been used. Free plugins and themes have limited features and upgrading to premium plugins and themes might remove the limitations.

6.2.2. Including User Feedback.

This can be used to check what visitors think about the website and once the user feedback has been analyzed, proper procedures can be put in place to cater the problems faced by the visitors.

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