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Developing a complete e-commerce solution

for Eläintarvike Murren Murkina Oy

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The goal of this final year project is to develop a complete e-commerce solution for "Eläintarvike Murren Murkina Oy", renewing their old website that was developed using Joomla, to give a new modern touch at the same time by adding new features and functionalities. During this project were taken into account several aspects of web development, design, marketing and optimization in order to increase the number of visitors.

Before start with the project an evaluation and comparison of different content management systems (CMS) to be used in the project was done. Magento, Oscommerce, Drupal and Joomla among others were taken into account but in the end the Prestashop and WordPress combination were chosen.

Prestashop has been used to cover the ecommerce part allowing the user to have an easy shopping experience. Prestashop covered all the needs except the blog section, which was realized with WordPress. Prestashop has several blog modules but none of them can be compared with WordPress functionalities.

Many different kind of problems were faced while developing this project which were solved with custom modification and many other techniques, so several of the front-end web development skills were improved during this project.

Keywords	CMS, PHP, SQL, JS, JQuery, SEO, Prestashop, WordPress, Web development, Open source.

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Contents

Abbreviations

API	Application Programming Interface
CMS	Content Management System
CSS	Cascading Style Sheet
FTP	File Transfer Protocol
SFTP	Secure File Transfer Protocol
HTML	Hypertext Markup Language
PHP	Hypertext Preprocessor
SEO	Search Engine Optimization
SEM	Search Engine Marketing
SQL	Structured Query Language
WYSIWYG	What You See Is What You Get
MVC	Model View Controller
UI	User Interface
UX	User Experience

1   Introduction

This project is an e-commerce solution developed for a pet food store "Eläintarvike Murren Murkina Oy" which has three physical stores located in Helsinki, Espoo and Vantaa. The aim of the project is to increase the visibility online and at the same time increase sales by opening a fourth shop which is not physical. I as a developer was involved in most of the decisions taken, acting as an IT consultant in order to develop the store with the most professional Information Technology point of view possible. The URL address of the online store where this project can be examined and evaluated is: www.murrenmurkina.com

"Eläintarvike Murren Murkina Oy" is a Finnish pet store famous for its variety of BARF (Bones And Raw Food). The company has been one of the pioneers in Finland to produce its own dog food recipes which are resold across others pet stores in the country due to their popularity.

Murren Murkina´s biggest competitors are "Musti ja Mirri" and "Peten Koiratarvike" and for this reason these companies were used as references during the development of the project taking into account their design, functionalities and keywords used for their search engine optimization.

A complete e-commerce solution development needs to cover a wide range of fields in the web development area. This report is concerned with different areas of the development and design process, and they are discussed in detail. First of all, it was very important to design a very good User Interface (UI) and User-friendly Experience (UX) so the user will be spending more time navigating through the website and feel good doing it. This is very important because the better the customer feels the more sales the website would have.

Search Engine Optimization (SEO) and Search Engine Marketing (SEM) played a major parts of this project because increasing the number of visitors was one of the main reason of developing a new website. Natural positioning is the best that can happen to any website but always a good marketing strategy helps to bring in new visitors. Google and Facebook took most of the attention on the SEM and SEO fields but logi-

cally the key here has been SEO (Sitemaps, page speed, Image compression, metadata, keyword density and analytics among others)

A good marketing is an excellent way to bring potential customers to the website. One of the most popular online email marketing tools is used to send a cross-browser campaign by a newsletter with attractive offers to more than 9.000 email addresses collected by the website over the last 10 years. Google is one of the principal search engines in the world and for that reason, every possible recommendation from Google Webmaster Tool and Google Analytics was followed.

2   Background of Content Management System (CMS)

2.1   History

In the early 1990's the concept of content management systems was unknown. Some of its functions were performed by separate applications: text editors, databases and custom programming.

Red Dot began developing "Roxen" in 1994 and by the end of 1995 the company had a CMS that used a database. "Typo3" was one of the first open source CMS whose development began in 1997 but eventually "PHPNuke" was the software that launched the popularity of these systems due to the Internet user communities when its development began in 2000. After that in October 2001 "Movable Type" a weblog publishing system developed by Six Apart was released and almost simultaneously SilverStripe Limited launched "SilverStripe". On the other hand, "Drupal" became open source in the same year, beginning the CMS development revolution. [1]

Nowadays content manager systems are widely used due to their easy use and friendly interface. Communities of users and developers are so extensive that most of the systems have regular updates aiming to be up to date with the latest technologies and security breaches.

2.2   Open source versus proprietary CMS

There are many reasons why people commonly choose open source software against proprietary software but the principal reason why open source software is than popular nowadays is because the software itself is 100% free for everybody.
Proprietary systems can also be very useful depending on the project and the needs. In this projects open source software were chosen for several reason:

- The website can be hosted under any hosting company.
- The source code is open to modifications which in this project was needed.
- Open source software is maintained by a community of users so most of the problems presented during the development were solved instantly across forums and blogs from the community.

Personally I have had experience with both kinds of systems and under my experience there is nothing that cannot be done with an open source system. Proprietary systems are loosing market year by year whereas at the same time open source offering is improving in every aspect. [2]

2.3   Advantages and disadvantages of CMS.

The advantages of using any CMS are obvious, because once you complete any CMS installation you can see a default page already built and have a bunch of functionalities installed. Blog, commenting, user registration and contact form systems are usually included with every CMS installation by default, but in the other hand it is very easy to extend any functionality, just installing plugins or modules with functionalities like photo galleries, interactive maps or even SEO.

Also the best advantage from the user perspective is that updating the website is relatively easy and there is no need of advanced knowledge to do this thanks to the WYSIWYG editors (What You See Is What You Get) implemented in every CMS.

One of the biggest disadvantages appears when the website requires a functionality that is not included and is not found on the list of thousands of plugins that can be added. In this cases we need to understand how plugins are built in order to make custom modification to a plugin already built or build our own plugin. Thanks to the huge community that already exist this task is not as difficult as it was years ago.

3 Prestashop

Prestashop is a popular open-source ecommerce solution launched as a student project in 2005. Up to date this thesis was written the latest Prestashop version is 1.6 and it cover 5.34% of the market worldwide as shown in figure 1, only Woocommerce, Opencart, Magento and Shopify are ahead of it.
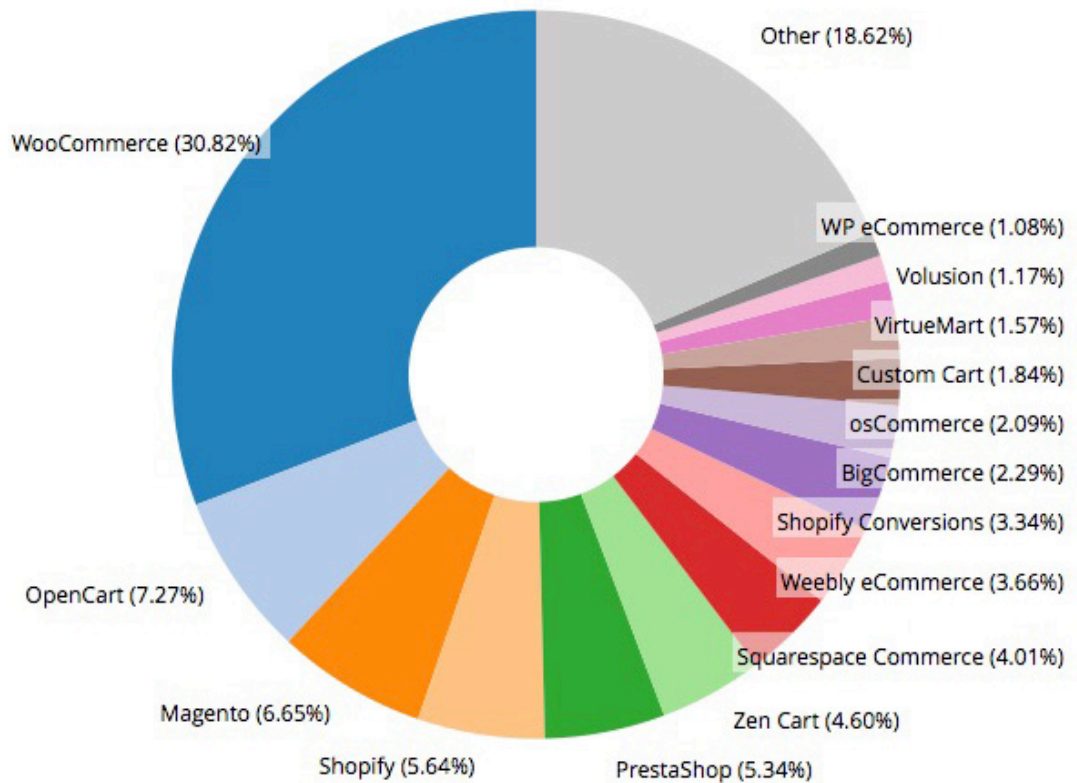

Figure 1: Statistics for websites using e-commerce solutions [3]

Woocommerce is leading covering more than a quarter of the market but the reason for its popularity is because Woocommerce is a plugin built to be integrated with WordPress.

3.1 Comparison with similar CMS

There are dozens of ecommerce solutions that could be compared but we are going to compare Prestashop only with the three largest solutions according with the graph above (Figure 1), namely Woocommerce, Opencart and Magento.
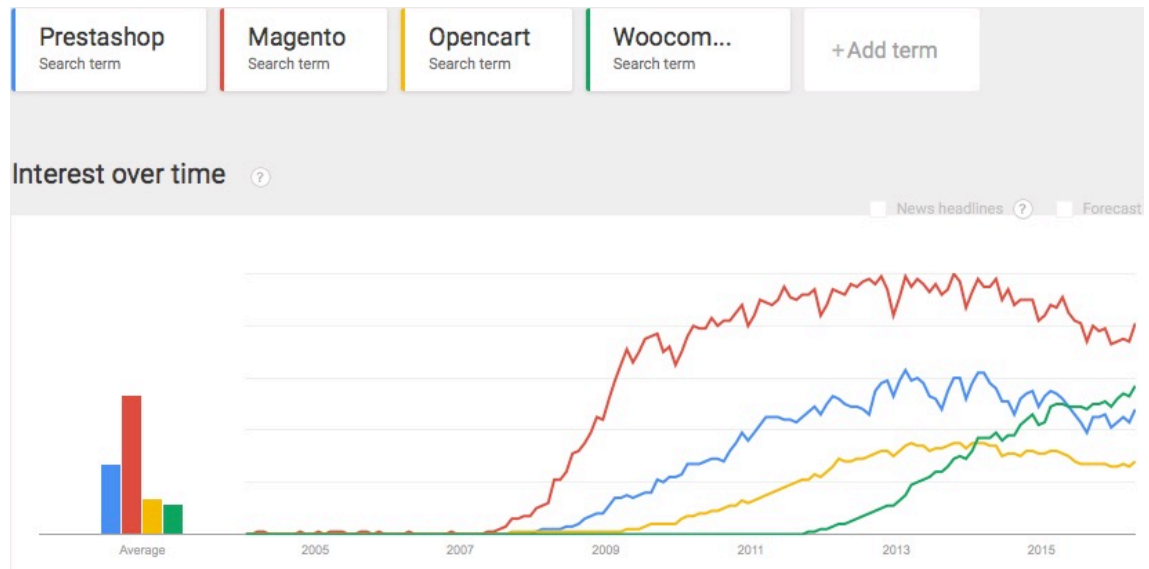

Figure 2: Popular e-commerce solutions comparison [4]

As we can appreciate in figure 2, Prestashop is the second most popular behind Magento according to Google Trends.

The main reason why Magento was not chosen is because of its complex CMS administrative panel. The customer required an easy way to maintain the website and Magento has so advanced administrative panel that it makes complicated normal maintenance tasks (Magento was installed and tested but rejected by the customer)

In figure 2 can also be appreciated that Woocommerce has been booming in the past 2-3 years but it was not an option because Woocommerce is not an actual Ecommerce solution, Woocommerce is a WordPress advance plugin which allows to convert a WordPress page into a webshop. Woocommerce owns its popularity to WordPress and that is why is between the top 5 solutions.

3.2   Requirements of installation

Not every hosting provider offers the same software version and characteristics. In order to have a successful Prestashop installation the following requirements have to be fulfilled:

- PHP 5.2 or later.
- MySQL 5.0 or later.

Most of the hosting providers can offer all the requirements mentioned above but for a perfect installation it is also recommended that the hosting runs Unix/Linux. [5]

3.3   Installation step by step

Prestashop installation is an easy task that can be done in less than ten minutes following these four steps:

- The first step is to download Prestashop package. It is available in 65 languages but we can always import some extra-languages after the installation.
- Once the package has been downloaded it needs to be uploaded to our server, FTP or SFTP access is needed for this task.
- Use any browser to access the URL where Prestashop has been uploaded and follow the steps (It required a database)
- The last step is very important for security: Delete the Install folder and rename the administrator folder in order to have a unique administrator URL.

Once the installation is done its time to customize the shop. Prestashop has some internal steps to cover this area of customization. Adding products, categories and payment methods amount others are some of these steps but it will be needed more advance knowledge it it requires style and functionalities customizations [5]

3.4   Prestashop extensions

Prestashop can be extended installing features called "Modules", each Prestashop module has it own files inside the same folder (usually named with the module´s name) this structure makes easy to find the files in order to make custom modifications in the code. Prestashop follows a standard which is MCV (Model View Controller architecture) so each module commonly uses the same architecture as well.

Prestashop by default has multiple modules installed for its own functionality as well as a default template which in this project was customized and used without the need of

installing any third-party template. This list provides a short information of third party modules installed in this project in order to extend Prestashop functionality:

- TM footer: Installed to improve the UX and UI, adding a forth menu-column and simplifying the administrator maintenance task.
- Paytrail: Is a popular payment method in the Nordic countries due to the amount of payment methods the module has integrated such as Nordea, OP bank, Klarna and Danske Bank among others.
- Mailchimp: This module is used to integrate Mailchimp API into the website in order to have communication between the website and Mailchimp itself.
- Smart Blog: At the beginning it was used to have a blog integrated with Prestashop but after a test period it was replaced for a WordPress installation which include more featured.

All these modules information will be explained in the pages 19-25, where I will justify its usage.

3.5   Reason for choosing Prestashop

The principal reason why Prestashop was chosen among others was for its easy use and intuitive design of its interactive panel. Prestashop is very intuitive and user-friendly so the future user would be able to learn the basics of maintaining its shop in relative small amount of time compared to other similar e-commerce systems.

4   WordPress

WordPress is by far the most popular open source Content Management System in the world. As we can see in the graph below (Figure 3) at the moment it covers an amazing 38% of the market worldwide which is about 5 times as much as its bigger competitor Drupal.
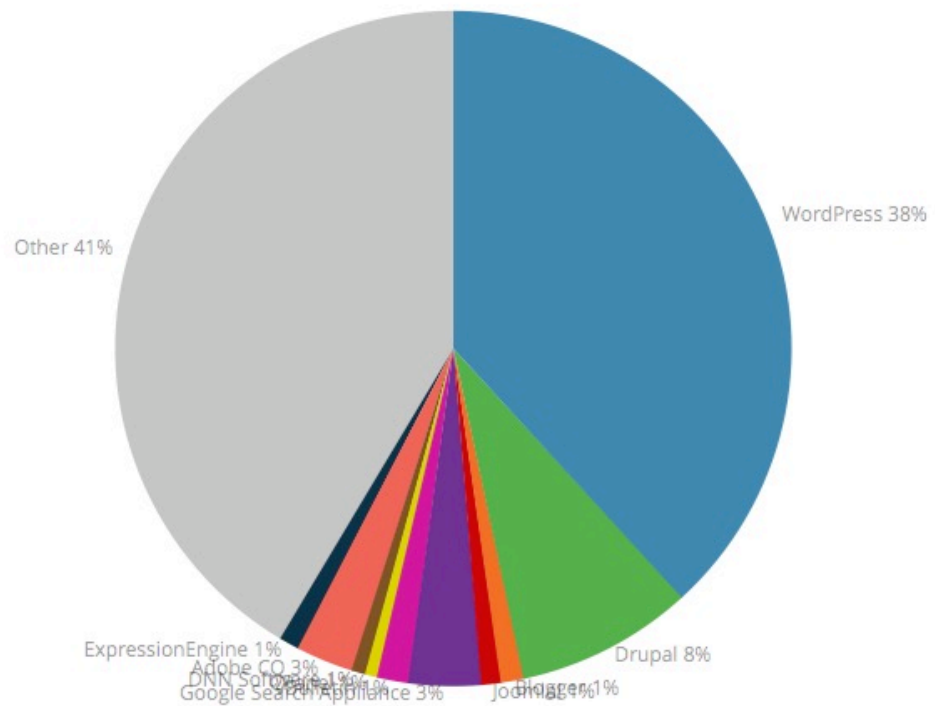

Figure 3: Statistics for websites using CMS technologies [3]

Nowadays WordPress is considered the most user-friendly open-source content management being used by millions of websites worldwide and growing day by day.

4.1 Comparison with similar CMS

As we can see the popularity of WordPress is far above all its competitors and the real reason is because there have been thousands of persons (WordPress community) all over the world improving the system day by day since 2003. Here in figure 4 can be appreciated the difference between WordPress and its strongest competitors. [4]
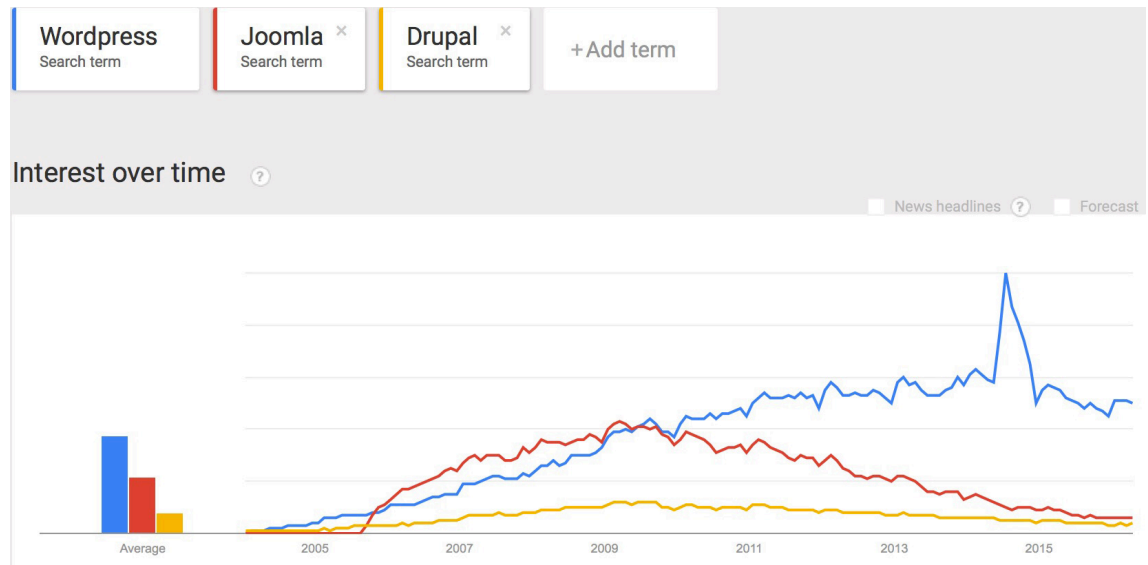
Figure 4: Popular CMS comparison [4]

WordPress biggest competitors are Joomla and Drupal but neither of them can be compared with WordPress just because WordPress has 44.084 plugins against Joomla with 7.763 and Drupal with 22.863. [6][7][8]

The numbers speak for themselves but we should also mention the big number of free and paid templates developed for WordPress, translations and a huge community which continues developing the system.

4.2 Requirements of installation

WordPress requires a newer version of PHP and MySQL than Prestashop but anyway those are the requirements that any hosting provider should be able to cover:

- PHP 5.6 or later.

- MySQL 5.6 or later.

WordPress recommends to change the server´s default shared username for security reasons but this is something that has to be asked to the hosting provider. [6]

4.3 Installation step by step

WordPress is very well-known because it has a famous five-minute installation, it allows the user to have a complete WordPress website with all its functionalities in less than five minutes.

- The first step as always is to download the system from its official website.
- Once the package is in your local machine it needs to be uploaded to the desired location.
- Use any browser to access the URL where WordPress has been uploaded and follow the steps (It required a previous database creation and access to it).

WordPress by default does not include any special plugin so in order to improve WordPress functionality there are several hundreds of plugins ready to be installed. [6]

4.4 WordPress extensions

WordPress can be extended installing features called: "Plugins", which is the most common way to increase WordPress functionality but it can also be extended with special template installations like premade templates specially developed to be integrated with Woocommerce plugin.

Templates, also known as "Themes", are an extension which provides a package of HTML, CSS and JavaScript files among others in order to set a professional pre-design to a website. Nowadays there are a huge number of templates professionally pre-designed for every CMS. Here are some of the best websites to find professional templates:

- Wordpressgraphics.com.
- Templatemonster.com.
- Elegantthemes.com.
- Shape5.com.

In this list we can find free or paid templates ready to be installed and used with Word-Press and other CMSs.

There are 44.084 different plugins that can be downloaded from the WordPress official website, most of them made by the community and being free of charge. The list in figure 5 shows all the plugins installed in the blog section. The list is periodically updated in order to have the latest plugins version avoiding security breaches. [6]
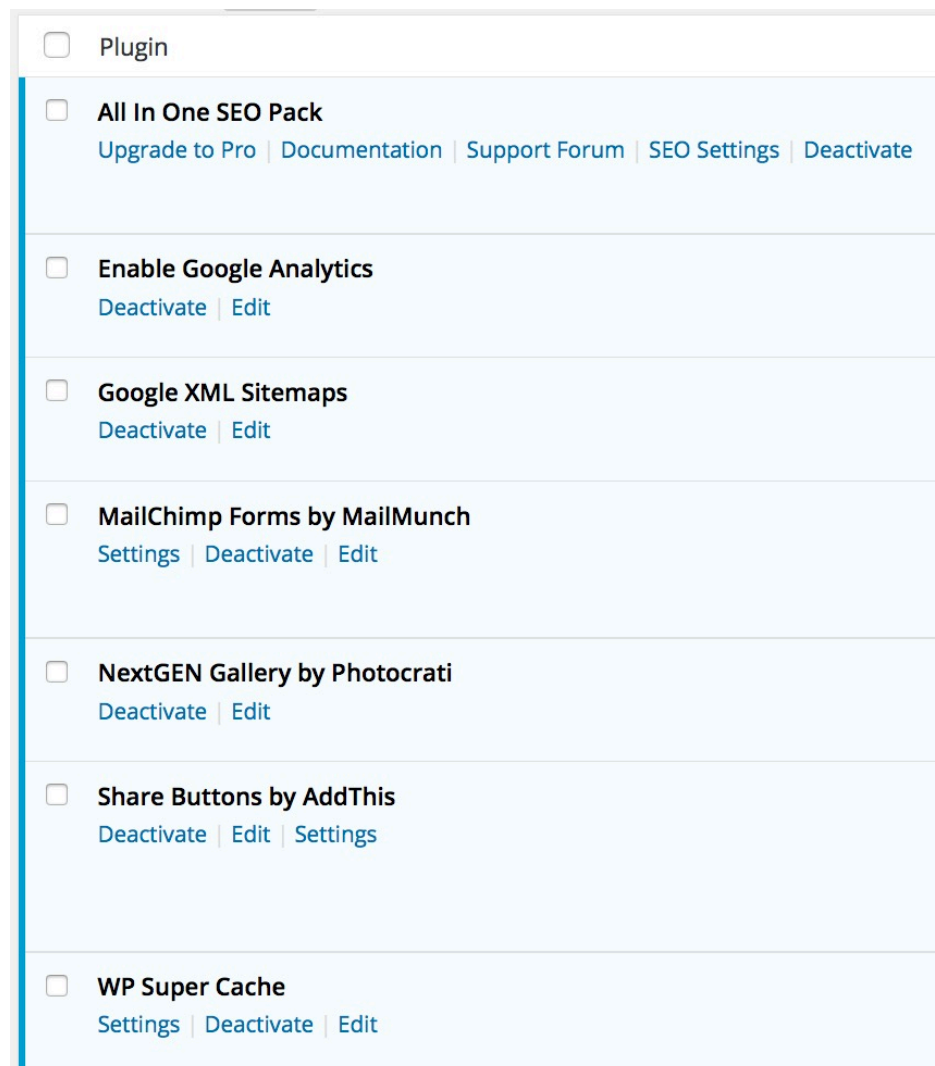

Figure 5: List of plugins installed in the blog

All in One SEO Pack, Google Analytics, Google XML Sitemaps and WP Super Cache modules were installed to increase the project SEO and performance at the same time follows the website evolution using Google Analytic tools.

Mailchimp Forms, NextGEN Gallery and Share Buttons on the other hand were installed to increase WordPress functionality and cover other needs the CMS itself does not provide which in this case include a newsletter contact form, add social media share buttons and create a photo gallery.

4.5 Reason for choosing WordPress

WordPress was an obvious choice because of its strengths: a customizable tool, easy to use and search-engine friendly. With WordPress all the requirements were covered and, moreover, it provides a great variety of functionalities in the package.

5   Custom design and programming

5.1   User interface and user experience

The objective of user interface design is to predict what the user needs are and to ensure that the element is placed in the right location to be reached and facilitate the interaction.

The best practices for designing an interface include the following:
- Keep the interface simple
- Create consistency and use common elements
- Be purposeful in page layout
- Strategically use colour and texture
- Use typography to create hierarchy and clarity
- Make sure that the system communicate what is happening

User Experience encompasses all aspects to meet the needs of the customer with elegance that produces joy while using the website. It is important to differentiate UX from UI design. UI will focus on making logical layouts to find what is required during the navigation and UX is focusing on making the experience also enjoyable. [9] [10]

5.1.1   Colours

Following the concepts mentioned in the section 1.1 related to user interface and user experience, it is important to relate colours to human perspectives or concepts that resemble certain emotions or feelings just by looking at an image or in this case, a website. Eläintarvike Murren Murkina Oy has one slogan, "Back to nature" and it can be read on the top-left corner of the website. its ideology is to be an environmentally friendly shop providing the maximum possible of natural, organic and/or ecological products in theirs shops.

In order to represent an environmentally friendly shop, different types of brown was chosen symbolizing nature, also some green colours have been added to the banners and wood texture to some buttons and contents backgrounds.

The website has a complete white background giving the feeling of cleanliness and freshness, red colour on the offers sliders to attract attention and different scales of greys in order to be neutral with the public.

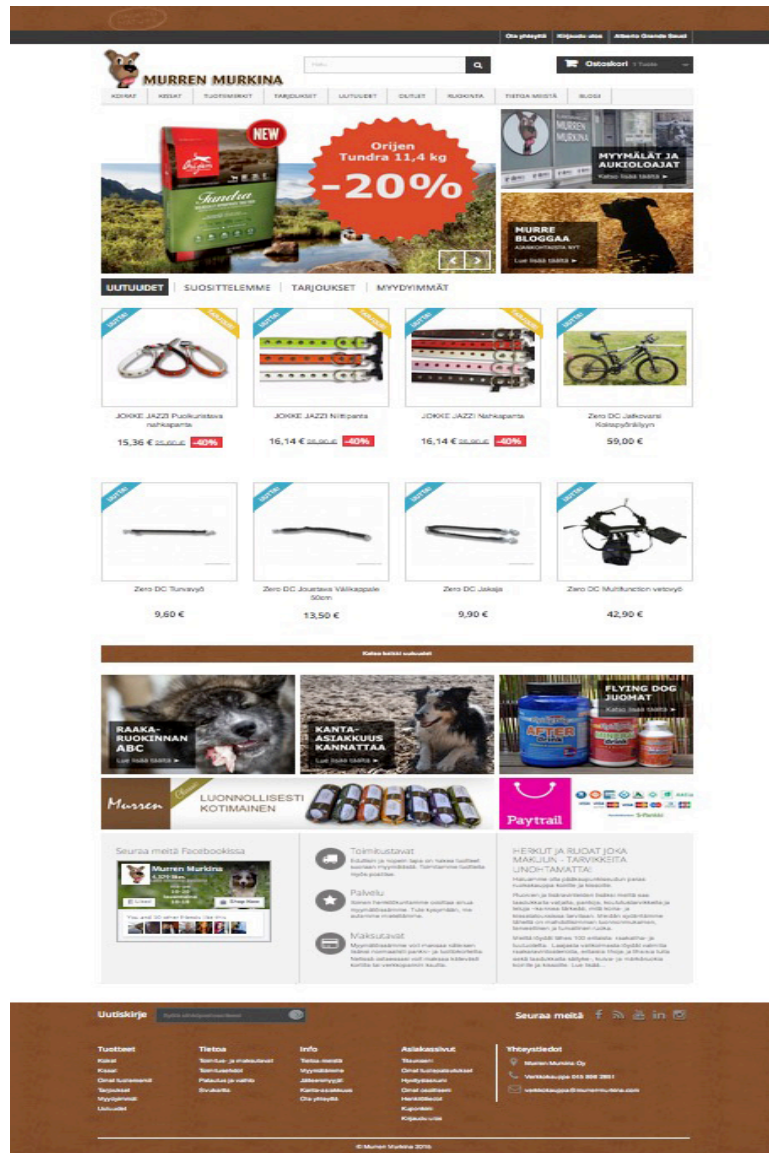As shown in the figure 6, brown, wood textures and white are the dominant factors on the site.

Figure 6: Screenshot from the home page

As shown in figure 6, the site has a full width brown header and footer with wood texture and between them an open white content with different sections.

5.1.2   Usability

As part of the UI principles one of the main characteristics is to have a good usability and this means making the system or product accessible to use, to extent the usage and the audience for a better effectiveness, efficiency and this will be reflected in the satisfaction (what the user thinks about the product's ease of use) [11]

One of the best examples of usability in this website is shown in figure 7 and it is one of the most important parts of every online store, the buying process. In our case a new visitor can place an order with just 5 steps: Summary, Sign in, Address, Shipping, and Payment.

Figure 7: Example of usability using steps to make an order

Those 5 steps mentioned in figure 7 can be reduced significantly if the visitor has been registered already and has inserted a physical address. A minimum of one physical address is mandatory to every customer in order to know where the order has to be shipped to.

Another example of good usability on the website is the menu structure. The menu have been designed to facilitate the visitor to find products in the fewest number of clicks possible showing the products in their corresponding categories, sections or brands, as shown in figure 8.
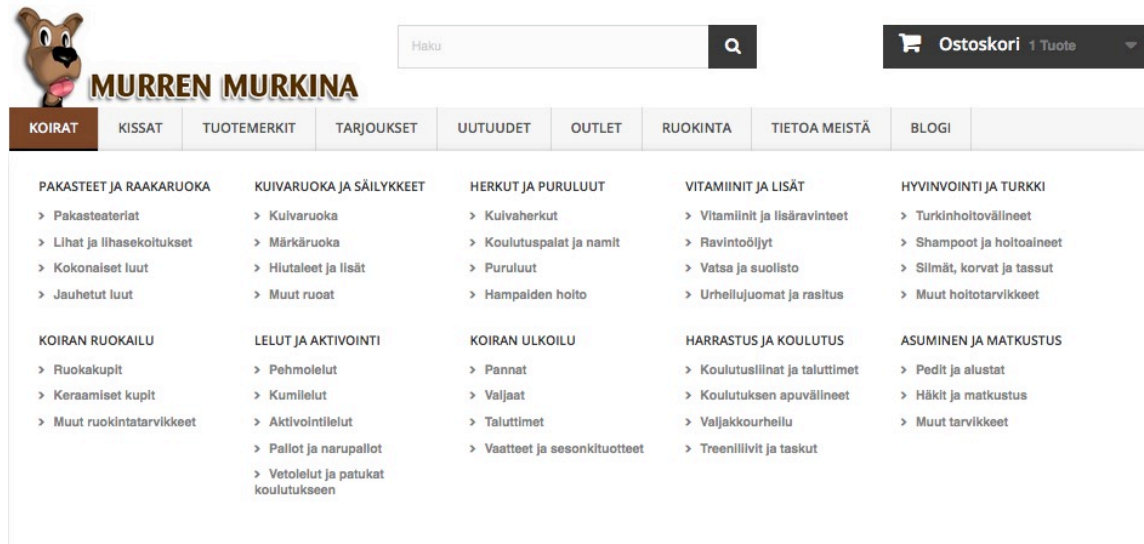
Figure 8: Example of usability applied to the navigation of the site

Figure 8 shows how the button "Koirat" displays a set of subcategories ordered by main categories and shown in 5 columns and 2 rows structure.

5.1.3   Responsiveness

Responsiveness became an important part of the layout´s design and it adaptiveness to devices that are used to surf the web. This includes tablets, desktops, game consoles, phones, TVs and even wearable devices. Screen sizes will be different for each other and that gives us the task to adapt Murren Murkina´s website to any of these devices [12]

The template chosen is fully responsive itself but not all of the modules installed were. We had several problems about responsiveness but everything was solved using one of the most used, intuitive, and powerful front-end frameworks: Bootstrap.

Bootstrap was created as a web design framework for developing responsive websites so that the main focus is to be displayed in mobile devices. [13]

Also we used CSS media queries for some custom responsiveness. The example figure 9 shows how Facebook box responsiveness was managed to improve in different screen sizes.

```
8416    @media (min-width: 480px) {
8417      #facebook_block{min-height:0px;}
8418
8419    }
8420    @media (min-width: 768px) {
8421      #facebook_block{min-height:563px;}
8422
8423    }
8424    @media (min-width: 992px) {
8425      #facebook_block{min-height:430px;}
8426    }
```

Figure 9: Example code for media queries

The media queries in figure 9 were added because the container was not high enough in smaller screens so in order to improve its user interface and make it more user-friendly it was adjusted to different heights depending on the screen size.
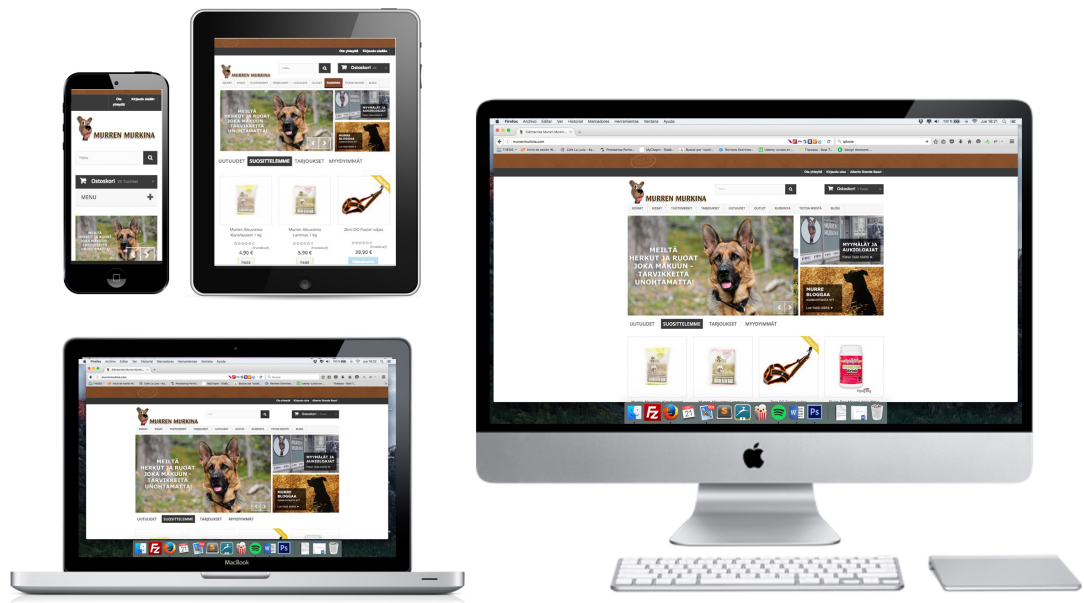
Figure 10: Example of how the website responds to the most popular screen sizes

Figure 10 shows how the website appears on Apple devices but this also will apply to products made by other brands.

5.2   Extra modules installed

Within Prestashop there are several options to extend its system in many different situations according to the needs of the website or the needs of the user interacting with it.

The next points will provide more information about most important modules that were installed and applied to Murren Murkina website.

5.2.1   TM footer

A Prestashop installation by default installs dozens of modules. Most of them are very useful but there are certain modules which can be replaced or deleted with the purpose of making the site lighter or in this case easier to manage. TM footer module was installed to improve the UX and UI, adding a forth menu-column on the footer and at the same time replacing 2 modules (Block categories and CMS block) and saving charging time.

Before installing TM Footer module in order to make any modification to the menus, the user needed to access through the CMS administrative panel to add each column, now everything can be found under TM footer configuration making the task easier to the administrator and improving the usability by making the interaction easier for the owner of the website or who is going to maintain the website.

To add a fourth column to the footer structure and improve the look, several modifications were needed but in summary thanks to bootstrap the task was easily solved just by adding some extra classes to the containers.

In figure 11 we can visualize how a Prestashop footer looks without any custom modification and then the effect of TM footer on the website of Murren Murkina.
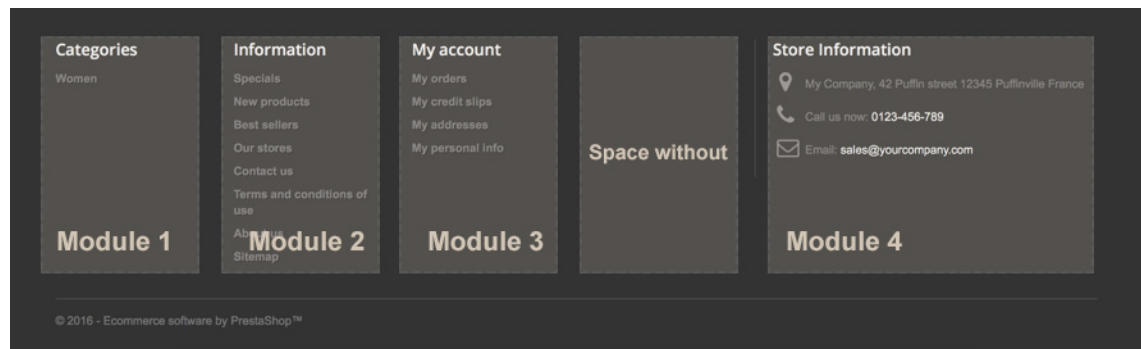
Figure 11: Comparison of the footer before/after the modifications

TM footer module by default only allows to insert 5 buttons per row. In order to be able to add more than five we customized the script as figure 12 shows. Also it was needed to add a few extra bootstrap classes to the html elements in order to make the TM module fully responsive in every size and screen resolutions.


```
tmfooterlinks.tpl

1   <div id="tmfooterlinks">
2       {foreach from=$xml->link item=home_link name=links}
3       <section  class="footer-block col-xs-12 col-sm-2">
4           <h4>{$home_link->$field1}</h4>
5           <ul class="toggle-footer" style="">
6               <li class="item"><a href="{$home_link->$field3}">{$home_link->$field2}</a></li>
7               <li class="item"><a href="{$home_link->$field5}">{$home_link->$field4}</a></li>
8               <li class="item"><a href="{$home_link->$field7}">{$home_link->$field6}</a></li>
9               <li class="item"><a href="{$home_link->$field9}">{$home_link->$field8}</a></li>
10              <li class="item"><a href="{$home_link->$field11}">{$home_link->$field10}</a></li>
11              <li class="item"><a href="{$home_link->$field13}">{$home_link->$field12}</a></li>
12              <li class="item"><a href="{$home_link->$field15}">{$home_link->$field14}</a></li>
13              <li class="item"><a href="{$home_link->$field17}">{$home_link->$field16}</a></li>
14              <li class="item"><a href="{$home_link->$field19}">{$home_link->$field18}</a></li>
15              <li class="item"><a href="{$home_link->$field21}">{$home_link->$field20}</a></li>
16          </ul>
17      </section>
18      {/foreach}
19  </div>
20
21  <section class="bottom-footer col-xs-12">
22      <div style="text-align:center;">© <a class="_blank" href="http://www.murrenmurkina.com" target="_blank">Murren Murkina</a> 2015</div>
23  </section>
```

Figure 12: Modification in the code (footer.tpl)

The footer copyright section was also included in the TM footer module source code and aligned to the centre as shown in figure 12.

5.2.2   Mailchimp

Prestashop has its own newsletter modules installed by default but its functionality is to collect email in the database to be printed later or imported in a third party marketing tool to be used.

"Eläintarvike Murren Murkina Oy" uses Mailchimp for its SEM. Mailchimp is one of the most popular online email marketing tools used to send cross-browser campaigns. In order to simplify the task of exporting emails form Prestashop and importing into Mailchimp, it was decided to use a Mailchimp module which uses its API. After setting up this functionality, as soon as a user subscribes to the newsletter, it will be automatically added to Mailchimp database being ready to be used for different marketing purposes.

Figure 13: Mailchimp module after front-end modifications

Figure 13 shows how the Mailchimp module looks like after being modified and customized according to the concept of the website that is requested by the client.

5.2.3   Smart Blog

At the beginning of the development, a free blog module for Prestashop called Smart Blog was used but after several months of use it became difficult to maintain for the administrator and it did not satisfy all the needs required.
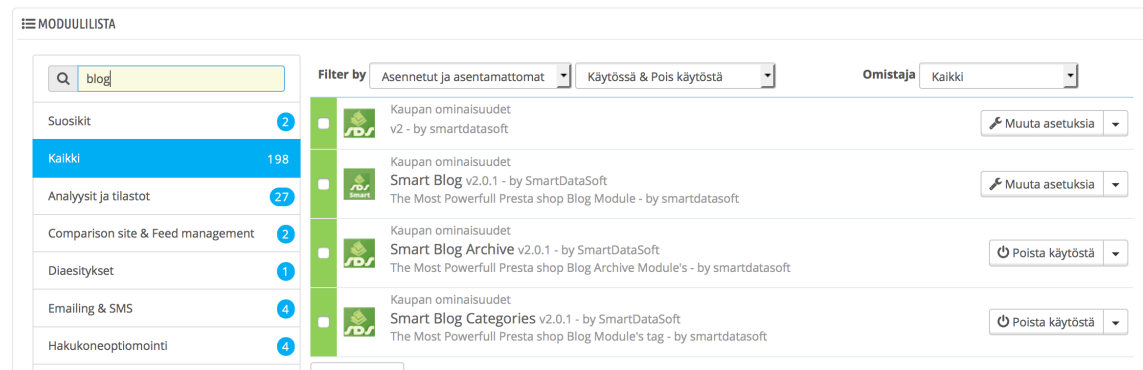
Figure 14: List of Smart Blog modules installed

A smart blog requires different modules in order to be fully functional as shown in figure 14, which made it difficult when any modification and maintenance was performed.

Some examples of the uncovered requirements are listed below:

- Google indexation wasn't done properly.
- The UI was not appealing, then it was decided to migrate all the articles already written to a new fresh WordPress installation.
- Not a user-friendly interface to do maintenance.

Now with WordPress installed and customized, the administrator has an independent blog from Prestashop CMS (installed under the subdomain subdomain /ajankohtaista/). The design has been adapted to match the colouring of the Prestashop installation giving the visitor the sensation that it is in a different Prestashop section as shown in figure 15.

Figure 15: Screenshot from the blog page

The reason why this design was customized was to create a similar look, but as the user was in a different subdomain it needed to have a unique layout to differentiate it from the home page. The main target was to have some light differences between WordPress and Prestashop designs.

One of the highlights within the added features is the possibility to see a photo gallery that is not included by default in a WordPress installation. Figure 6 demonstrates how a photo gallery is displayed.

Figure 16: Screenshot of how the photo gallery in the blog looks like.

5.2.4   Paytrail

At the beginning Paytrail was not installed because of its monthly price, but after a few months it was obvious that it was required in order to have a faster payment process. After installing Paytrail all the work is more simple and easy and at the same time it increases sales and user experience.

Installing Paytrail reduced the responsiveness of the website. In order to fulfil the user interface requirement, it was necessary to customize it to make it responsive as shown in figure 17.
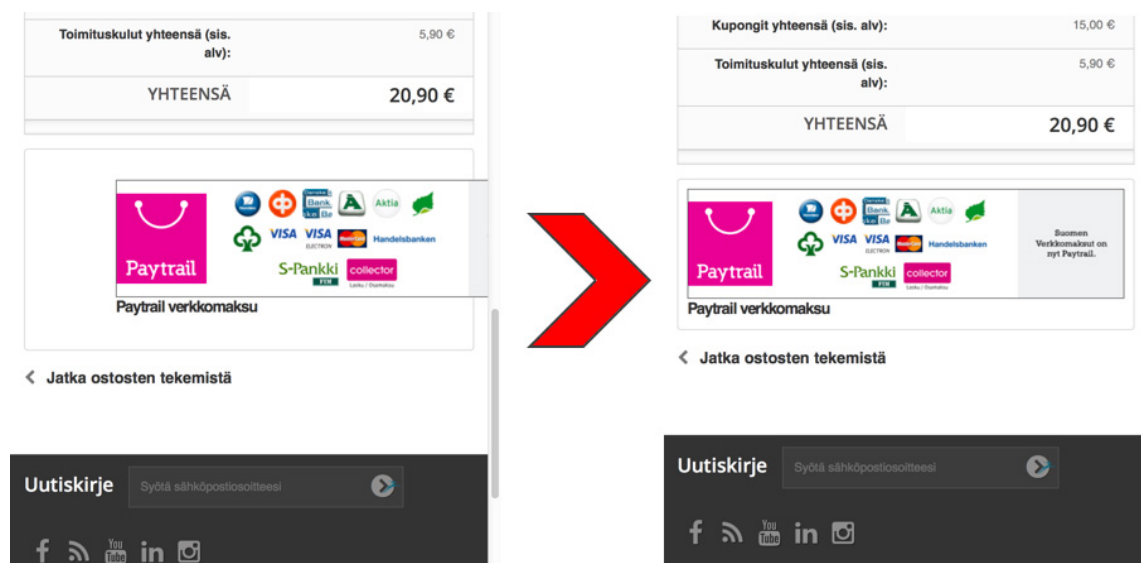
Figure 17: Paytrail conversion to responsive

5.3   Custom modifications

This project needed several custom modifications done into the source code in order to provide all the requirements asked from the client's point of view. Here is listed the most highlighted custom modifications done while developing this project:

- In order to improve the UX on the home page, it was decided to add a button on each tab which would facilitate the navigation for the visitor adding the possibility to go and see all the offers, the latest products or newest products. The modules installed did not have a certain option to display the buttons so custom modification was needed as seen in figure 18.

```javascript
$(".tab-content").append( "<a href='#' class='view-all-products-button button btn btn-default'></a>" );
$(document).ready(function(){
    setviewallbutton();
})
$('#home-page-tabs li').click(function() {
    setTimeout( function(){
        setviewallbutton();
    },50);
});

function setviewallbutton() {
        if ($(".blocknewproducts").parent().hasClass('active')){
            $(".view-all-products-button").show();
            $(".view-all-products-button").attr("href", "/uutuudet");
            $(".view-all-products-button").text("Katso kaikki uutuudet");
        }
        if ($(".homefeatured").parent().hasClass('active')){
            $(".view-all-products-button").hide();
        }
        if ($(".blockbestsellers").parent().hasClass('active')){
            $(".view-all-products-button").show();
            $(".view-all-products-button").attr("href", "/myydyimmat");
            $(".view-all-products-button").text("Katso kaikki myydyimmät");
        }
        if ($(".blockspecials").parent().hasClass('active')){
            $(".view-all-products-button").show();
            $(".view-all-products-button").attr("href", "/tarjoukset");
            $(".view-all-products-button").text("Katso kaikki tarjoukset");
        }
}
```

Figure 18: JavaScript code to add "more" buttons

The code in figure 18 checks which tab the visitor is in currently and depending on the tab gives different attributes to the button in order to have the correct link and name shown.

- Prestashop does not have any photo gallery option by default. In order to add a photo gallery of each shop it was required to add a code and then link it to a WordPress page which would show a photo gallery done with NextGEN WordPress module. So by adding this we improved the communication between WordPress and Prestashop.

Figure 19: Photo galleries added in Prestashop

All the information shown in figure 19 is coming from Prestashop database except the photo gallery which has been inserted in the source code linking it to different galleries created in WordPress.

- A map with the different locations of the reseller was required and the best way to add this type was using Google Maps features and API.
  A map was created using to Google Maps and then added to a Prestashop CMS page using a simple Iframe exported from Google Maps tool as can be seen in figure 20.
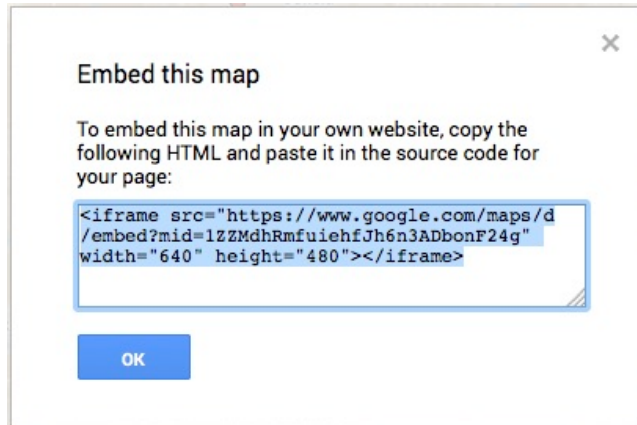
Figure 20: Iframe code example [14]

If the map needed to be updated its enough to update through Google Maps and it will update automatically on the Murren Murkina website.

6   Publishing

The website was published on 1 November 2015 and the process took less than an hour to be completed. Every precaution was taken before setting the website in order to minimize the offline time.

6.1   Cross browsing

There are many different browsers available and for each browser it was necessary to test the site and how it is displayed because not every browser interprets the source code in the same manner.

The testing of the site was done with an online tool "www.browsershots.org". This tool provides screenshots from every browser to be tested and as an output screenshots of the site views from each browser are given for comparison. After that is the task of the developer to give the same layout in all of them.
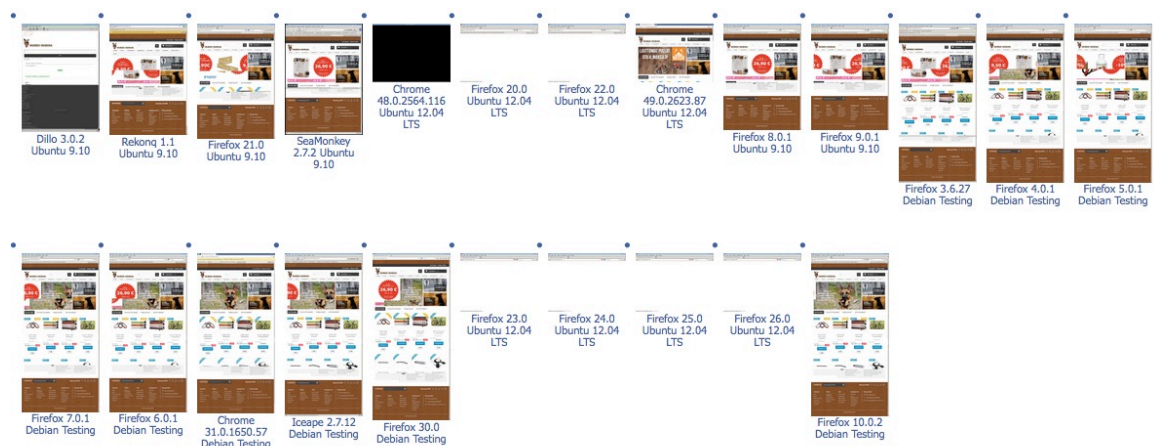

Figure 21: Screenshot showing the website in different browsers [15]

As we can see in figure 21, the screenshots are displayed one next to the other for a better comparison view.

6.2   Broken links

There are several ways to test if a website has broken links or not but not all of them are precise and effective as "Broken Link Checker" for Chrome, using this tool facilitates how to find all broken links on a website.

Here we can see an example (in figure 22) of how this tool highlights every broken link with a pink colour and marking "404" error.
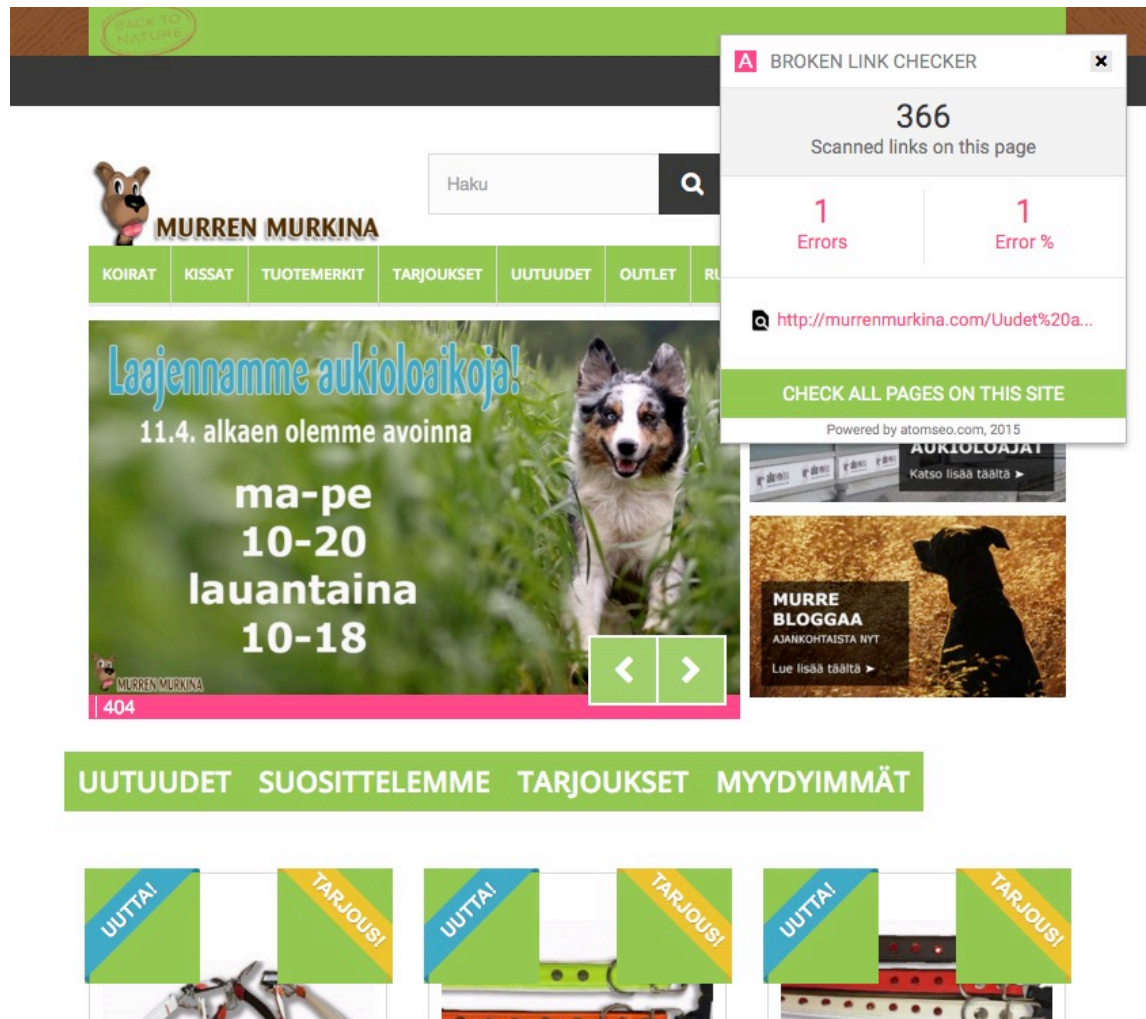

Figure 22: Broken Link Checker tool in action

It is very important to check periodically because from time to time we can have this type of error and Google can penalize it by grading the website positioning in a not positive rank. Also from the user perspective it is not very professional to encounter a link that leads to a broken page.

6.3   SEO

Before publishing the website several aspects of SEO were taken into account. Here the most important aspects covered while developing the project are listed:

- Page speed was improved compressing every CSS, JS and also every image used in the website.
- Different metadata were inserted to each page increasing the possibility to be found be the search engines using those words.
- Key word density was taken care of, while adding metadata in order to have a right number of keywords without being penalized by the search engines.
- Deleting multiple unnecessary JavaScript calls and moving the calls to the footer and not on the header as Google Webmaster Tool recommends.

After publication the website has been followed by Google Analytics and Google Webmaster Tool in order to check every page is correctly indexed and to improve its positioning by the time we realise new improvement.

6.4   Sitemaps (Cronjobs)

The website is continuously changing adding new products every day and increasing their catalogue and for that reason its recommended to inform Google about those changes. The best way to inform Google about any change on the website is sending periodically a sitemap with those new pages added and then wait until Google indexes the pages in its database.

Cronjobs can be used in order to simplify this task. A Cronjobs command was inserted configuring it to be executed daily and open an URL which automatically produces a new sitemap with all the products recently added. These types of commands can be settled using "Cronjobs", which is a tool usually located on the server's configuration panel.

Minute	Hour	Day of Month	Month	Day of Week	Command	Select
0	0	*	*	*	/usr/local/bin/curl --silent http://murrenmurkina.com/modules/gsitemap/gsitemap-cron.php?token=2962375cad&id_shop=1 > /dev/null	☐

Figure 23: Configuring Cronjobs from the server admin panel

6.5   First impression

The first impression the website gave on the sales was not very positive because the only payment method added was "pay by bank wire" but after the Paytrail module was installed the sales increased considerably.

On the other hand statistics about visitors were positive since the first day of publishing have been showing improvement after several months of observation. As we can see in figure 24 in the first month it doubled the page views from 14.000 in October 2015 to 30.000 in November and four months after publishing the website got over 50.000 page views. It was very good news to see that all the SEO work is making effect progressively on the Google search engine giving the website a natural positioning.

The page view per session was also doubled from 2.5 to 5 pages per session as the average as shown the first statistic from figure 24.
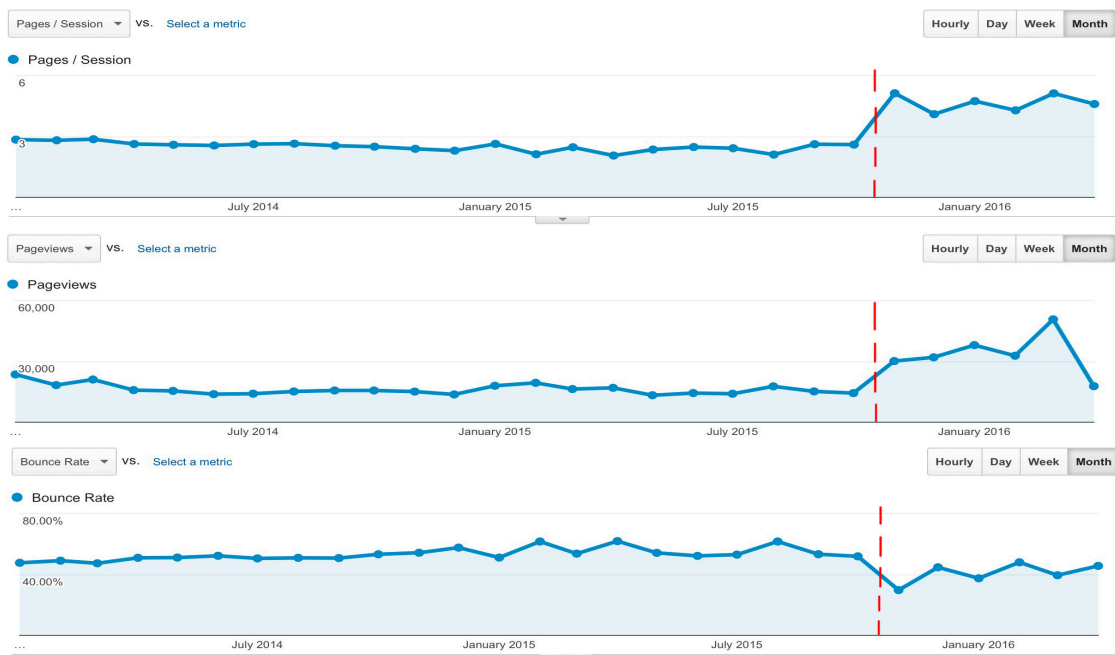

Figure 24: Statistics comparing before/after publish the website [16]

Other statistics to highlight are the bounce rate. Bounce rate is the number of visitors who leave from the website after the first page and without interacting with the website. Logically, the fewer people do that, the better. The statistics shows a notable reduction from 51% to 29% in the first month of publishing.

7 Results and discussion

Developing this e-commerce and publish it online took about six months. During the development of the website, it was necessary to study different references added to the end of the thesis. Most of the new information learned were about search engine optimization and marketing, topics which I was not familiar with. It was a learning process and experience full of discoveries that complemented my professional set of skills as a web developer.

It was necessary to work with WordPress plugins and Prestashop modules used to satisfice all the functionalities that the website required and also this created the need to modify the code in order to customize the UI and UX.

In the end, the project had very positive feedback in such a positive state that "Eläintarvike Murren Murkina Oy" is considering to double their marketing budget for the second semester of 2016. Also because e-commerce is growing in general the company is considering to have its own stock of products only for the webshop because at the moment four shops are sharing the stock and that can be a problem in the future.

8   Conclusion

The purpose of this project was to increase the appearance online and at the same time increase sales. The goal was reached from the first month after publishing. The publication date was on 1 November 2015 and the month after that the page views were doubled (from 14.000 in October 2015 to 30.000 in November according to Google Analytics). Also sales have been increasing since the first month.

The key to have a successful website is to continuously work on it and make improvements and updates periodically. Google algorithm changes from time to time and this makes it impossible to keep the website on the top of the search engine results. SEO is complex enough to the average user so that perfect optimization requires several years of research and maintenance to reach the goals.

Prestashop and WordPress are good solutions for develop websites or webshops but a good knowledge of several aspects of web development to have a technically good website will always be needed.

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Ecommerce front-end

Katso kaikki uutuudet

RAAKA-RUOKINNAN ABC

Lue lisää täältä ➤

KANTA-ASIAKKUUS KANNATTAA

Lue lisää täältä ➤

FLYING DOG JUOMAT

Katso lisää täältä ➤

Classic

Murren

LUONNOLLISESTI KOTIMAINEN

Paytrail

Aktia

VISA VISA MASTERCARD VISA

Handelsbanken S-Pankki

Seuraa meitä Facebookissa

Murren Murkina
4,173 likes

Liked   Shop Now

You like this

Toimitustavat

Edullisin ja nopein tapa on hakea tuotteet suoraan myymälästä. Toimitamme tuotteita myös postitse.

Palvelu

Iloinen henkilökuntamme odottaa sinua myymälöissämme. Tule kysymään, me autamme mielellämme.

Maksutavat

Myymälöissämme voit maksaa käteisen lisäksi normalisti pankki- ja luottokorteilla. Netissä ostaessasi voit maksaa kätevästi kortilla tai verkkopankin kautta.

HERKUT JA RUOAT JOKA MAKUUN - TARVIKKEITA UNOHTAMATTA!

Haluamme olla pääkaupunkiseudun paras ruokakauppa koirille ja kissoille.

Ruokien ja lisäravinteiden lisäksi meiltä saa laadukkaita valjaita, pantoja, koulutustarvikkeita ja leluja –kaikkea tärkeää, mitä koira- ja kissatalouksissa tarvitaan. Meidän sydäntämme lähellä on mahdollisimman luonnonmukainen, terveellinen ja turvallinen ruoka.

Meiltä löydät lähes 100 erilaista raakaliha- ja luutuotetta. Laajasta valikoimasta löydät valmiita raakaravintoaterioita, erilaisia lihoja ja lihaisia luita sekä laadukkaita säilyke-, kuiva- ja märkäruokia koirille ja kissoille. Lue lisää...

Uutiskirje   Syötä sähköpostiosoitteesi

Seuraa meitä

Tuotteet
Koirat
Kissat
Omat tuotemerkit
Tarjoukset
Myydyimmät
Uutuudet

Tietoa
Toimitus- ja maksutavat
Toimitusehdot
Palautus ja vaihto
Sivukartta

Info
Tietoa meistä
Myymälämme
Jälleenmyyjät
Kanta-asiakkuus
Ota yhteyttä

Asiakassivut
Tilaukseni
Omat tuotepalautukset
Hyvityslaskuni
Omat osoitteeni
Henkilötiedot
Kuponkini
Kirjaudu ulos

Yhteystiedot
Murren Murkina Oy

Verkkokauppa 045 898 2851

info@murrenmurkina.com

Custom modifications

CUSTOM CSS modification in the teamplate

```
.sf-menu > li {
   border-right: 1px solid #d6d4d4;
   float: left;
   margin-bottom: -3px;
}
@media (max-width: 767px) {
.sf-menu > li {
   border-right: medium none;
   float: none;
   position: relative;
}
.sf-menu > li span {
   height: 30px;
   position: absolute;
   right: 6px;
   top: 20px;
   width: 30px;
   z-index: 2;
}
.sf-menu > li span::after {
   content: "γ";
   font-family: "FontAwesome";
   font-size: 26px;
}
.sf-menu > li span.active::after {
   content: "η";
}
}
}
.sf-menu > li > a {
   border-bottom: 3px solid #e9e9e9;
   color: #484848;
   display: block;
   font: 800 18px/22px "Open Sans",sans-serif;
   padding: 10px 20px;
   text-transform: uppercase;
}
.sf-menu > li.sfHover > a, .sf-menu > li > a:hover, .sf-menu > li.sfHoverForce > a {
   background: #333333 none repeat scroll 0 0;
   border-bottom-color: #666666;
   color: white;
}
.sf-menu li li li a {
   color: #777777;
   display: inline-block;
```

```css
   font-size: 13px;
   font-weight: bold;
   line-height: 16px;
   padding-bottom: 10px;
   position: relative;
}
.sf-menu li li li a::before {
   content: "    ";
   display: inline-block;
   font-family: "FontAwesome";
   padding-right: 10px;
}
.sf-menu li li li a:hover {
   color: #333333;
}
.sf-menu li ul {
   box-shadow: 0 5px 13px rgba(0, 0, 0, 0.2);
   display: none;
   left: 0;
   padding: 12px 0 18px;
   top: 45px;
   z-index: 99;
}
@media (max-width: 767px) {
.sf-menu li ul {
   top: 0;
}
}
.sf-menu li li ul {
   background: rgba(0, 0, 0, 0) none repeat scroll 0 0;
   box-shadow: 0 0 0 rgba(0, 0, 0, 0);
   display: block !important;
   opacity: 1 !important;
   position: static;
}
.sf-menu li li li ul {
   padding: 0 0 0 20px;
}
.sf-menu li li li ul {
   width: 220px;
}
ul.sf-menu li:hover li ul, ul.sf-menu li.sfHover li ul {
   top: -999em;
}
ul.sf-menu li li:hover ul, ul.sf-menu li li.sfHover ul {
   left: 200px;
   top: 0;
}
```