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Online store based on MAGENTO E- COMMERCE

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ABSTRACT

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E-commerce application is an important part of web applications and Magento is the most popular e-commerce development platform.

This bachelor's thesis is made for Fusion Oy. The purpose of this project is to enable e-commerce for Fusion Oy business by implementing the Magento e-commerce framework.

The biggest challenge is to make Magento local. The tasks involved in this project, includes the study of Magento module development, Itella posti web service, Paytrail web service. The transport module has been made to use Itella posti shipment service. The shipment module has been made to use online payment service of Nordic region banks such as Nordea bank and Danske bank.

KEYWORDS:

Responsive design, Magento, E-commerce, localization

ABBREVIATIONS

API	Application Programming Interface
WSDL	Web Services Description Language
URL	Universal Resource Locator
XML-RPC	XML Remote Procedure Call
REST	Representational State Transfer
B2C	business to customer
B2B	business to business
CMS	Content Management System
ERP	Enterprise Resource Planning
CSS	Cascading Style Sheets
HTML	Hypertext Markup Language
MVC	Model-View-Controller

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1 INTRODUCTION

With the popularity of e-commerce, a large number of traditional industries are turning to e-commerce to develop new markets, such as clothing, pharmaceutical, construction, etc.

The demand prompted competition, with a large number of e-commerce platforms comes out. It is very important to understand which platform is more suitable for consumer and also easy for developers to implement.

Magento is an eBay company; it is also the most popular open source e-commerce platform. Magento gives the consumer convenient shopping process, a variety number of payment methods, and the best user experience. On the other hand, modular design, rich web service interface and open source code also give developers a very good technical support.

2 MAGENTO OVERVIEW

2.1 What is Magento

Magento is a rapidly growing e-commerce system. It is based on PHP and MySQL, the system has a modular architecture and rich functionality. It offers lots of API to make third-party software integration much easier.

Magento is also an open source software, which Fully comply with the open source OSL 3.0 protocol. Magento development teams update the version almost every week, which brings the encouragement from many supporters.

Magento has attracted a large number of small and medium size enterprises. /1/

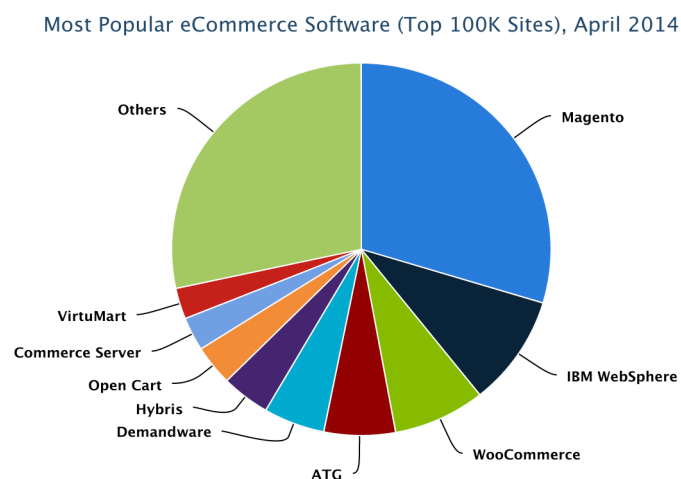


Figure 2.1 Most popular e-commerce software (Top 100K sites), April 2014.

Especially in the European market, Magento has become the first choice for many small and medium size enterprises. In the USA, China, Japan, There are a lot of

famous B2C, C2C platforms, such as Taobao, Amazon, and eBay. But in Europe market, consumption is relatively decentralized. The prosperity of small and medium size enterprises promote the development of open source e-commerce software. Unlike those giant e-commerce platforms, Magento can make e-commerce website more personalized in promotion rules, shopping patterns etc.

Top ranking Internet-retailers In Europe

This ranking is based on 2013 turnover figures.

Rank	Name company	Country of origin	Online turnover in mio € in Europe	Growth 2013/2012
1	Amazon	USA	19,050	14%
2	Otto	Germany	6,145	8%
3	Apple	Luxembourg	2,944	9%
4	Tesco	UK	3,200	19%
5	Home Retail Group	UK	2,641	0%
6	Kering (Redcats)	France	2,400	21%
7	Dixons	UK	1,862	16%
8	CDiscount	France	1,782	2%
9	Zalando	Germany	1,762	52%
10	Vente-Privee	France	1,600	23%

/2/

Figure 2.2 Top ranking internet-retailers in Europe

2.2 Features

2.2.1 Responsive design

The newest Magento Enterprise and Community edition is released with a responsive theme. By 2015, mobile Internet data traffic will surpass PC traffic side. With the rapid development of mobile and tablet, responsive design has been an essential element of the website. Following are the main features:

- Native app VS Responsive design
 1. Native need more programming skills (Objective-C, Java, .NET)
 2. Native app has strict and complex rules to publish, Responsive design websites only open a browser and create a shortcut
- Magento layout is a flexible grid layout
The web pages are arranged by a grid rule to standardize the layout, it brings a lot of convenience to the web front-end development.



Figure 2.3 Grid layouts in different resolution

- Meta tag definitions
 1. Use viewport meta tag to control the layout of the mobile browser

```
<meta name="viewport" content="width=device-width, initial-scale=1,maximum-scale=1" />
```

2. Full Screen when open through shortcut

```
<meta name="apple-mobile-web-app-capable" content="yes" />
```

3. Hide Mobile Status Bar

```
<meta name="apple-mobile-web-app-status-bar-style" content="blank" />
```

- CSS Media Queries

In CSS, it can be set up different types of media conditions, different media types of expressions used to check whether the media subject matches certain conditions, if the media type meets the appropriate conditions, it will call the corresponding stylesheet.

```
1 /* for 240 px width screen */
2 @media only screen and (max-device-width:240px){
3     selector{ ... }
4 }
```

```
1 /* for 320px width screen */
2 @media only screen and (min-device-width:241px) and (max-device-width:320px){
3     selector{ ... }
4 }
```

```
1 /* for 480 px width screen */
2 @media only screen (min-device-width:321px)and (max-device-width:480px){
3     selector{ ... }
4 }
```

Figure 2.4 Media query code with different resolution

2.2.2 Powerful admin panel

- Login Page

During Magento installation, admin credential will be asked to fill in.

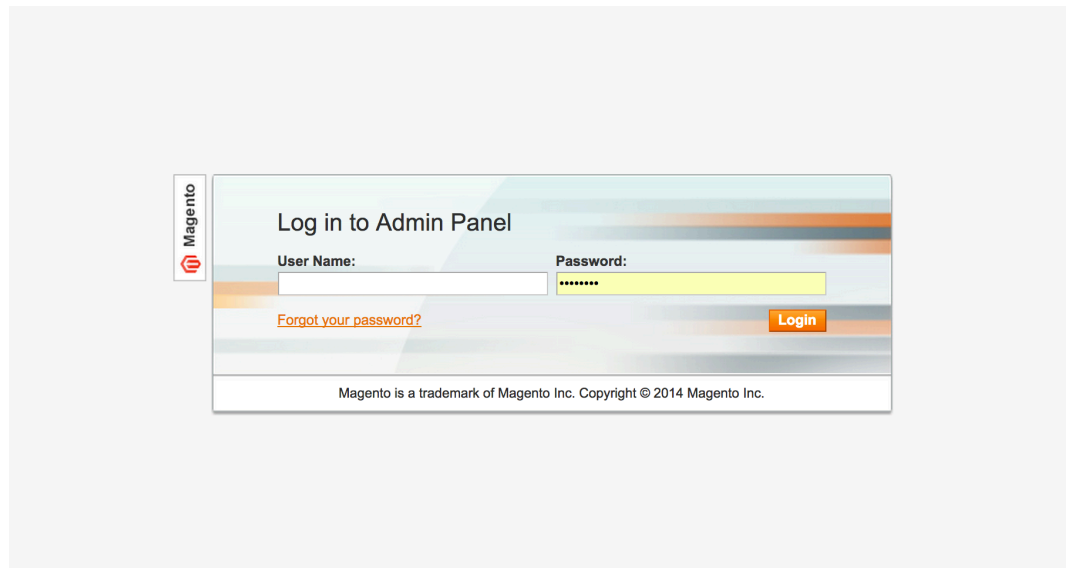


Figure 2.5 Admin panel log in page

- Dashboard Page

Dashboard page gives brief information of most viewed products, new customers, new orders, sales amount and etc.

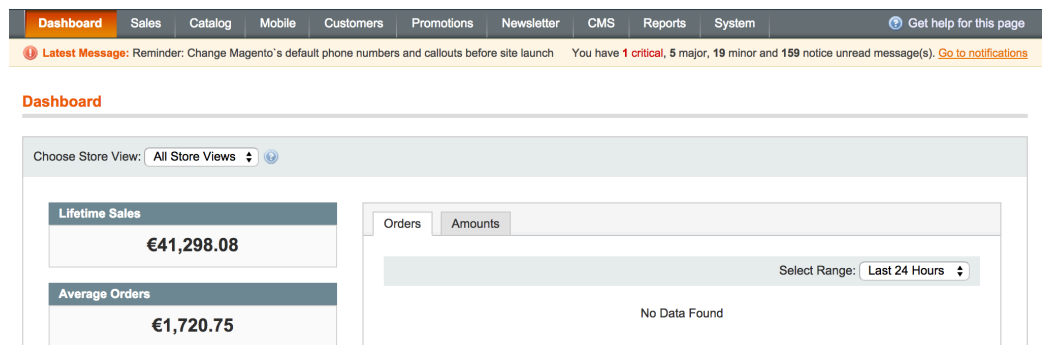


Figure 2.6 Admin panel dashboard page

- Sales

Sales section is an extremely important part of Magento, particularly order management, invoice management, Tax configuration.

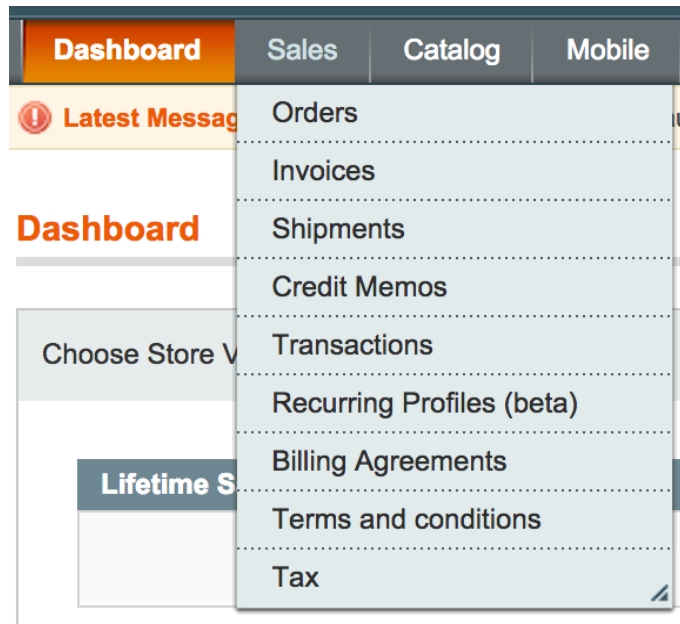


Figure 2.7 Admin panel sales pages

1. Order

Order section has a list of orders; those orders could be in different stats. For example processing, canceled, it is also possible to create custom statuses for orders. Admin can create orders for specific customers.

Orders [Create New Order](#)

Page 1 of 3 pages | View 20 per page | Total 52 records found | [New Order RSS](#) | Export to: CSV | [Export](#) | [Reset Filter](#) | [Search](#)

Select Visible | Unselect Visible | 0 items selected | Actions | [Submit](#)

	Order #	Purchased From (Store)	Purchased On	Bill to Name	Ship to Name	G.T. (Base)	G.T. (Purchased)	Status	Action
Any			From: To:			From: To:	From: To:		
<input type="checkbox"/>	145000010	Main Website Madison Island English	Nov 17, 2014 6:51:45 AM	yu lin	yu lin	€620.00	€620.00	Processing	View
<input type="checkbox"/>	145000009	Main Website Madison Island English	Sep 26, 2014 6:06:14 AM	yu lin	yu lin	€74.00	€74.00	Processing	View
<input type="checkbox"/>	145000008	Main Website Madison Island English	Sep 26, 2014 6:02:21 AM	yu lin	yu lin	€665.00	€665.00	Processing	View

Order View Order # 14500010 | Nov 17, 2014 6:51:45 AM Back Edit Send Email Credit Memo Hold Ship Reorder

Information

- Invoices
- Credit Memos
- Shipments
- Comments History
- Transactions

Order # 14500010 (the order confirmation email was sent)

Order Date: Nov 17, 2014 6:51:45 AM
 Order Status: Processing
 Purchased From: Main Website
 Madison Island
 English
 Placed from IP: 127.0.0.1

Account Information

Customer Name: [yu lin](#)
 Email: linyusos@gmail.com
 Customer Group: General

Billing Address Edit

yu lin
 Ludviginkatu 1
 Helsinki, Uusimaa, 00130
 Finland
 T: 234234
 F: 324

Shipping Address Edit

yu lin
 Ludviginkatu 1
 Helsinki, Uusimaa, 00130
 Finland
 T: 234234
 F: 324

Payment Information

Verkkopankki- tai korttimaksu (Paytrail)
 Order was placed using EUR

Shipping & Handling Information

Posti - Toimitus työpaikalle tai kotiin €9,00

Figure 2.8 Admin panel order management page

2. Invoice

Invoice section has a list of invoice, those invoices can be printed, added comment. The administrator can choose to send the invoice to the customer by email.

Invoices

Page 1 of 1 pages | View 20 per page | Total 20 records found Export to: CSV Export Reset Filter Search

Select Visible Unselect Visible 0 items selected Actions Submit

Invoice #	Invoice Date	Order #	Order Date	Bill to Name	Status	Amount	Action
Any	From: To:		From: To:			From: To:	
<input type="checkbox"/> 10300005	Nov 17, 2014 6:52:35 AM	14500010	Nov 17, 2014 6:51:45 AM	yu lin	Paid	€620.00	View
<input type="checkbox"/> 10300004	Sep 26, 2014 6:08:47 AM	14500009	Sep 26, 2014 6:06:14 AM	yu lin	Paid	€74.00	View
<input type="checkbox"/> 10300003	Sep 26, 2014 6:02:56 AM	14500008	Sep 26, 2014 6:02:21 AM	yu lin	Paid	€965.00	View
<input type="checkbox"/> 10300002	Aug 25, 2014 9:51:09 AM	14500006	Aug 25, 2014 9:50:16 AM	yu lin	Paid	€291.11	View

Invoice #10300005 | Paid | Nov 17, 2014 6:52:35 AM (the invoice email was sent) Back Send Email Print

Order # 14500010 (the order confirmation email was sent)

Order Date: Nov 17, 2014 6:51:45 AM
 Order Status: Processing
 Purchased From: Main Website
 Madison Island
 English
 Placed from IP: 127.0.0.1

Account Information

Customer Name: [yu lin](#)
 Email: linyusos@gmail.com
 Customer Group: General

Billing Address Edit

yu lin
 Ludviginkatu 1
 Helsinki, Uusimaa, 00130
 Finland
 T: 234234
 F: 324

Shipping Address Edit

yu lin
 Ludviginkatu 1
 Helsinki, Uusimaa, 00130
 Finland
 T: 234234
 F: 324

Figure 2.9 Admin panel invoice management page

3. Tax configuration

Tax section can add product, customer tax classes. It can add different tax rates for different countries and zones.

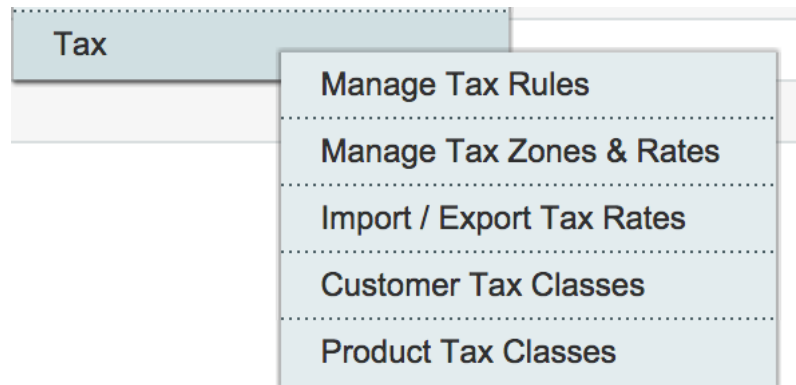


Figure 2.10 Admin panel tax configuration page

- Catalog

Catalog section is about product related function. It includes product management, order management, attribute management.

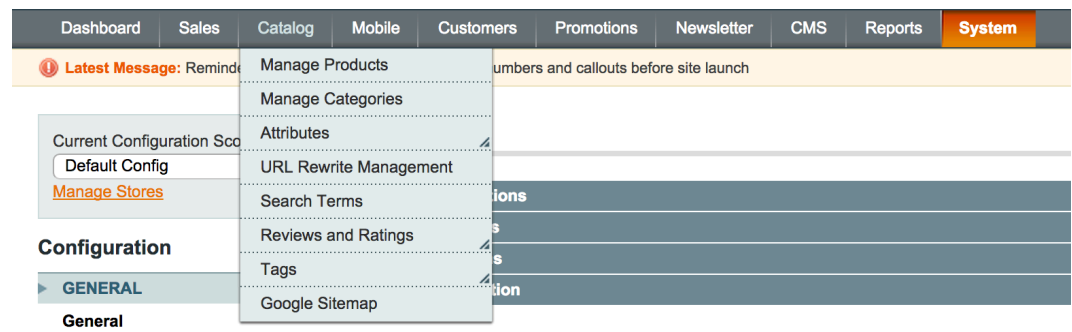


Figure 2.11 Admin panel catalog management page

1. Product

Product section has a list of products; those products could be enabled or disabled. The product can be added, updated, deleted, duplicated.

Manage Products [Add Product](#)

Choose Store View: All Store Views

Page 1 of 30 pages | View 20 per page | Total 581 records found | [Notify Low Stock RSS](#) [Reset Filter](#) [Search](#)

Select All | Unselect All | Select Visible | Unselect Visible | 0 items selected Actions [Submit](#)

ID	Name	Type	Attrib. Set Name	SKU	Price	Qty	Visibility	Status	Websites	Action
Any	From: To:				From: To: In: USD					
<input type="checkbox"/>	887 My Bundle Product	Bundle Product	Default	ABC 234			0 Catalog, Search	Enabled		Edit
<input type="checkbox"/>	886 My Configurable Product-Black-10	Simple Product	My Attribute Set	ABC 456-Black-10	\$50.00		10 Not Visible Individually	Enabled		Edit
<input type="checkbox"/>	885 My Configurable Product-Black-8	Simple Product	My Attribute Set	ABC 456-Black-8	\$50.00		10 Not Visible Individually	Enabled		Edit

Choose Store View: Default Values

Product Information

- General
- Prices
- Meta Information
- Images
- Design
- Gift Options
- Inventory
- Websites
- Categories
- Related Products
- Up-sells
- Cross-sells
- Product Reviews
- Product Tags
- Customers Tagged Product
- Custom Options
- Bundle Items

My Bundle Product (Default) [Back](#) [Reset](#) [Delete](#) [Duplicate](#) [Save](#) [Save and Continue Edit](#)

General [Create New Attribute](#)

Name * My Bundle Product [STORE VIEW]

Description * [WYSIWYG Editor] [STORE VIEW]

Short Description * [WYSIWYG Editor] [STORE VIEW]

Figure 2.12 Admin panel product management page

2. Category

Category section has a list of categories, it can add categories, assign products to category.

Categories [Reset](#) [Delete Category](#) [Save Category](#)

[Add Root Category](#) [Add Subcategory](#)

Choose Store View: All Store Views

[Collapse All](#) | [Expand All](#)

- Default Category (1)
- Women (52)
- Men (70)
- Accessories (58)
- Home & Decor (40)
- Sale (9)
- VIP (6)

Accessories (ID: 6)

General Information | Display Settings | Custom Design | Category Products

General Information

Name * Accessories [STORE VIEW]

Is Active * Yes [STORE VIEW]

URL Key accessories Create Permanent Redirect for old URL [STORE VIEW]

Thumbnail Image Choose File No file chosen [STORE VIEW]

Description [WYSIWYG Editor] [STORE VIEW]

Image Choose File No file chosen [STORE VIEW]

Accessories (ID: 6) Reset Delete Category Save Category

General Information | Display Settings | Custom Design | Category Products

Page 1 of 30 pages | View 20 per page | Total 581 records found Reset Filter Search

<input type="checkbox"/>	ID	Name	SKU	Price	Position
<input type="checkbox"/>	887	My Bundle Product	ABC 234		
<input type="checkbox"/>	886	My Configurable Product-Black-10	ABC 456-Black-10	\$50.00	
<input type="checkbox"/>	885	My Configurable Product-Black-8	ABC 456-Black-8	\$50.00	
<input type="checkbox"/>	884	My Configurable Product-Black-6	ABC 456-Black-6	\$50.00	
<input type="checkbox"/>	883	My Configurable Product	ABC 456	\$50.00	
<input type="checkbox"/>	882	My Grouped Product	ABC 123		
<input type="checkbox"/>	881	Black Nolita Cami-Black-S	wbk002c-Black-S	\$150.00	
<input type="checkbox"/>	880	Black Nolita Cami-Black-XS	wbk002c-Black-XS	\$150.00	
<input type="checkbox"/>	879	NoLita Cami-Pink-L	wbk000c-Pink-L	\$150.00	

Figure 2.13 Admin panel category management page

2.2.3 Web service

Magento API provides three different ways to use web service

- XML-RPC

XML-RPC can only use a limited number of data types and some simple data structures.

1. Create API to use with XML-RPC

User Information New User Back Reset Save User

User Info

User Role

Account Information

User Name *

First Name *

Last Name *

Email *

API Key *

API Key Confirmation *

This account is Active

Tools

- Web Services
 - SOAP/XML-RPC - Users
 - SOAP/XML-RPC - Roles
 - REST - Roles
 - REST - Attributes
 - REST - OAuth Consumers
 - REST - OAuth Authorized Tokens
 - REST - My Apps
- Design
- Import/Export
- Manage Current
- Transactional E
- Custom Variabl
- Permissions
- Magento Conne
- Cache Management
- Index Management
- Manage Stores
- Order Statuses
- Configuration

Figure 2.14 Admin panel XML-RPC page

2. Define current XML-RPC role scope, the scope here means resource access privilege, different role scope could have different a resource access privilege, for example, define a salesman role which can only access product resource and customer resource.

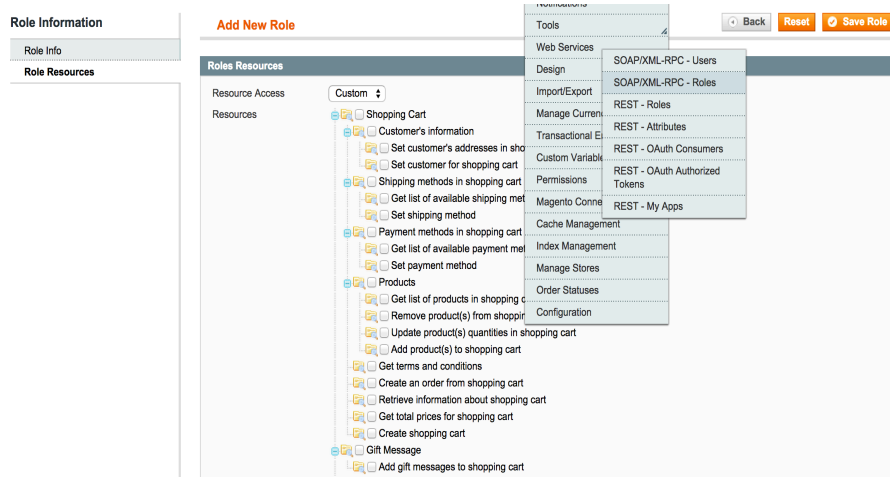


Figure 2.15 Admin panel XML-RPC role scope page

3. Demo code of how to invoke XML-RPC in Magento

To use XML-RPC, load the following URL into your XML-RPC client:

```
http://magentohost/api/xmlrpc/
```

where magentohost is the domain for your Magento host.

The following PHP example shows how to make XML-RPC calls:

```
$client = new Zend_XmlRpc_Client('http://magentohost/api/xmlrpc/');

// If somestuff requires api authentication,
// we should get session token
$session = $client->call('login', array('apiUser', 'apiKey'));

$client->call('call', array($session, 'somestuff.method', array('arg1', 'arg2', 'arg3')));
$client->call('call', array($session, 'somestuff.method', 'arg1'));
$client->call('call', array($session, 'somestuff.method'));
$client->call('multiCall', array($session,
    array(
        array('somestuff.method', 'arg1'),
        array('somestuff.method', array('arg1', 'arg2')),
        array('somestuff.method')
    )
));

// If you don't need the session anymore
$client->call('endSession', array($session));
```

The XML-RPC only supports the version 1 of the Magento API.

Figure 2.16 How to invoke XML-RPC in Magento

- SOAP V1 and V2
 1. Create API and define role scope for the use of soap is the same as XML-RPC scope
 2. Difference between SOAP V1 and V2

SOAP v1 do not have all methods included in WSDL, WSDL file only includes some simple methods like login. SOAP v2 have all the soap methods included in WSDL, which is much easier for third-party software to understand what method they can invoke.
 3. Use SOAP V1 and V2 to delete a product

Request Example SOAP V1

```
$client = new SoapClient('http://magentohost/api/soap/?wsdl');

// If somestuff requires api authentication,
// then get a session token
$session = $client->login('apiUser', 'apiKey');

$result = $client->call($session, 'catalog_product.delete', '6');
var_dump($result);

// If you don't need the session anymore
//$client->endSession($session);
```

Request Example SOAP V2

```
$proxy = new SoapClient('http://magentohost/api/v2_soap/?wsdl'); // TODO : change url
$sessionId = $proxy->login('apiUser', 'apiKey'); // TODO : change login and pwd if necessary

$result = $proxy->catalogProductDelete($sessionId, '6');
var_dump($result);
```

Figure 2.17 How to invoke SOAP to delete a product in Magento

- Restful API

1. Create REST API token

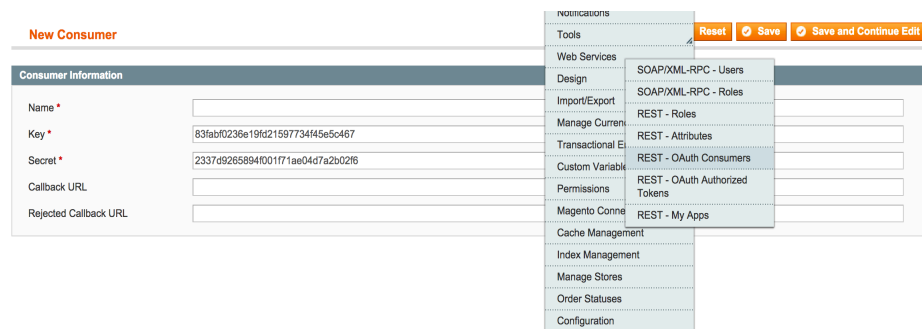


Figure 2.18 How to create REST API token in Magento

2. REST API request response process /3/

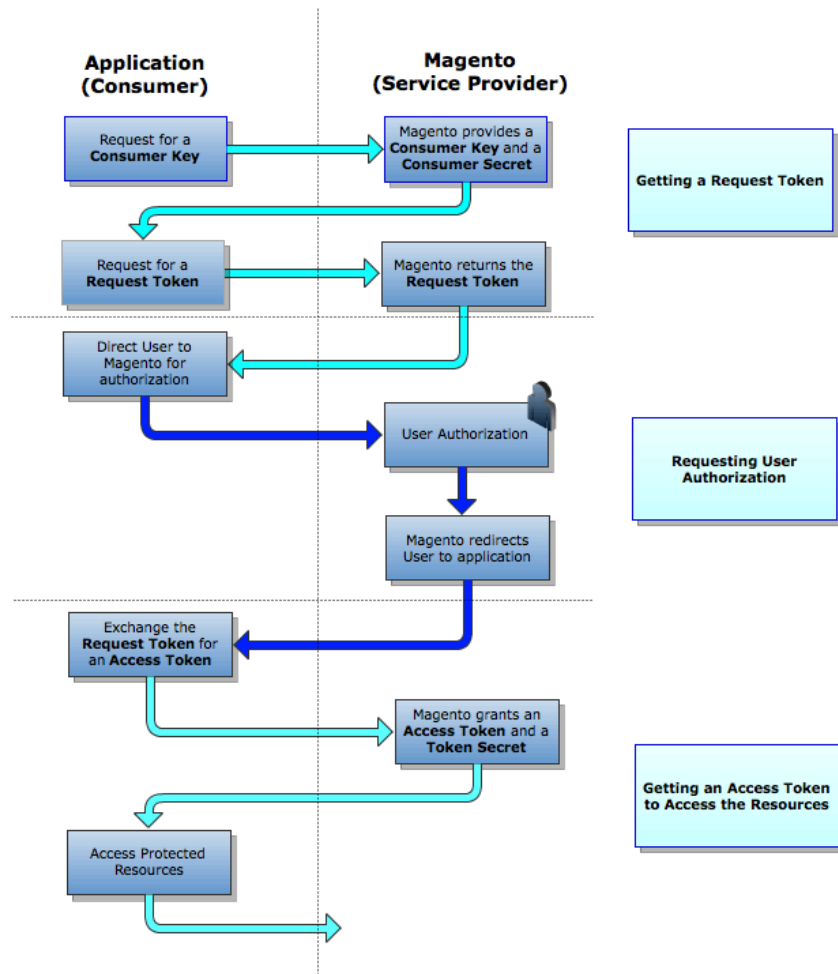


Figure 2.19 Rest API request response process

3. Use REST API to get a customer

Example:

GET <http://magentohost/api/rest/customers/2>

Response Body:

```
<?xml version="1.0"?>
<magento_api>
  <entity_id>2</entity_id>
  <website_id>1</website_id>
  <email>test@example.com</email>
  <group_id>1</group_id>
  <created_at>2012-03-22 14:15:54</created_at>
  <disable_auto_group_change>1</disable_auto_group_change>
  <created_in>Default Store View</created_in>
  <firstname>john</firstname>
  <lastname>Doe</lastname>
  <last_logged_in>2012-03-22 14:15:56</last_logged_in>
</magento_api>
```

Figure 2.20 Use REST API to get a customer in Magento

2.2.4 Multi websites & Multi stores

With Magento, it is able to manage multiple websites and stores by one Magento installation. This allows the owner to manage different web shops with multiple domains.

- Website

A site can contain one or more stores, these stores are sharing the same customer information, order information and shopping cart information

- Store

The shops can be established by a variety of different ways but need to be reminded that if they belong to the same site, then they will share certain information.

- Store Views

Store interface is mainly applied in the use of different languages.

For example, in one case, the customer needs a B2C and B2B sites, each site has different shops, B2C there are two shops are selling cosmetics and electronic products, each store requires a different language (Finnish, English, Chinese)

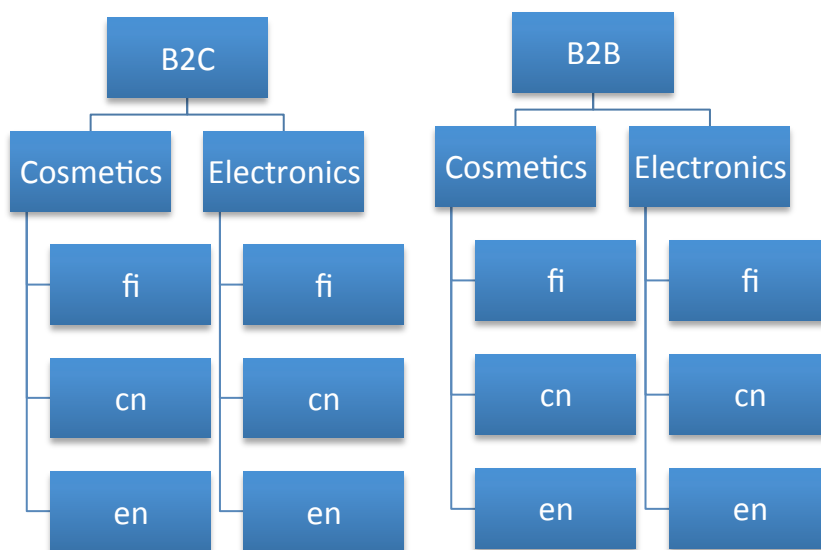


Figure 2.21 Multi store in Magento

2.2.5 Cache and index management

E-commerce store a large number of categories, products, orders and customers, High performance is a very important requirement, cache design and index design are essential function

- Cache management
 1. Cache management page in admin panel

Cache Type	Description	Associated Tags	Status
<input type="checkbox"/> Configuration	System(config.xml, local.xml) and modules configuration files(config.xml).	CONFIG	ENABLED
<input type="checkbox"/> Layouts	Layout building instructions.	LAYOUT_GENERAL_CACHE_TAG	ENABLED
<input type="checkbox"/> Blocks HTML output	Page blocks HTML.	BLOCK_HTML	ENABLED
<input type="checkbox"/> Translations	Translation files.	TRANSLATE	ENABLED
<input type="checkbox"/> Collections Data	Collection data files.	COLLECTION_DATA	ENABLED
<input type="checkbox"/> EAV types and attributes	Entity types declaration cache.	EAV	ENABLED
<input type="checkbox"/> Web Services Configuration	Web Services definition files (api.xml).	CONFIG_API	ENABLED
<input type="checkbox"/> Web Services Configuration	Web Services definition files (api2.xml).	CONFIG_API2	ENABLED

Additional Cache Management

Flush Catalog Images Cache Pre-generated product images files.

Flush JavaScript/CSS Cache Themes JavaScript and CSS files combined to one file.

Figure 2.22 Cache management page in admin panel

2. Magento cache is based on Zend framework, the cache file in Magento will have a default prefix 'mage'.

```

→ cache pwd
/Users/yulin/sites/magento1.9/web/var/cache
→ cache ls
mage--0 mage--2 mage--4 mage--6 mage--8 mage--a mage--c mage--e
mage--1 mage--3 mage--5 mage--7 mage--9 mage--b mage--d mage--f

```

Figure 2.23 Cache management folder

- Index management

1. Index management page in admin panel

Total of 7 index(es) have reindexed data.

Index Management

Select All | Unselect All | Select Visible | Unselect Visible | 0 items selected

Index	Description	Mode	Status	Update Required	Updated At	Action
<input type="checkbox"/>	Product Attributes	Index product attributes for layered navigation building	READY	NO	Nov 20, 2014 8:58:55 PM	Reindex Data
<input type="checkbox"/>	Product Prices	Index product prices	READY	NO	Nov 20, 2014 8:58:56 PM	Reindex Data
<input type="checkbox"/>	Catalog URL Rewrites	Index product and categories URL rewrites	READY	NO	Nov 20, 2014 8:59:03 PM	Reindex Data
<input type="checkbox"/>	Category Products	Indexed category/products association	READY	NO	Nov 20, 2014 8:59:03 PM	Reindex Data
<input type="checkbox"/>	Catalog Search Index	Rebuild Catalog product fulltext search index	READY	NO	Nov 20, 2014 8:59:04 PM	Reindex Data
<input type="checkbox"/>	Stock Status	Index Product Stock Status	READY	NO	Nov 20, 2014 8:58:54 PM	Reindex Data
<input type="checkbox"/>	Tag Aggregation Data	Rebuild Tag aggregation data	READY	NO	Nov 20, 2014 8:59:04 PM	Reindex Data

Figure 2.24 Index management page in admin panel

2. Sometimes too many products in the queue are waiting to index, index in admin panel may have no response. Magento offers another way which is index by shell scripts.

```

→ shell ls
abstract.php compiler.php indexer.php log.php
→ shell php indexer.php reindexall
Product Attributes index was rebuilt successfully
Product Prices index was rebuilt successfully
Catalog URL Rewrites index was rebuilt successfully
Category Products index was rebuilt successfully
Catalog Search Index index was rebuilt successfully
Stock Status index was rebuilt successfully
Tag Aggregation Data index was rebuilt successfully

```

Figure 2.25 Use command to index product, category, and stock.

2.2.6 Enterprise edition VS Community edition

For small and medium size enterprise, basic functions of Magento edition are enough to create and manage a user-friendly online shop. However, if a company has a larger scale, and need to dramatically increase sales, Magento Enterprise Edition would be a good option.

Below is the list about the difference between enterprise and community edition.

Function	Enterprise	Community
Senior Administrator role and restrictions of operation of licensing	Included	Not Included
Record administrator behavior	Included	Not Included
Gift Cards (real and virtual)	Included	Not Included
The customer credit limit	Included	Not Included
High-performance and full-page caching	Included	Not Included
Reward Points System	Included	Not Included
BridgeConnect module, make integration with other ERP systems easier	Included	Not Included
Rich Merchandizing Suite (RMS)	Included	Not Included
Strengthen data encryption	Included	Not Included
Improved content management system	Included	Not Included
Content staging and merging. Support for on-demand and scheduled merger and content	Included	Not Included

rollback		
Optimized index without affecting the customer's shopping experience	Included	Not Included

2.2.7 Import and Export

Magento has import/export function. Include customer and product import/export

- Product and customer import

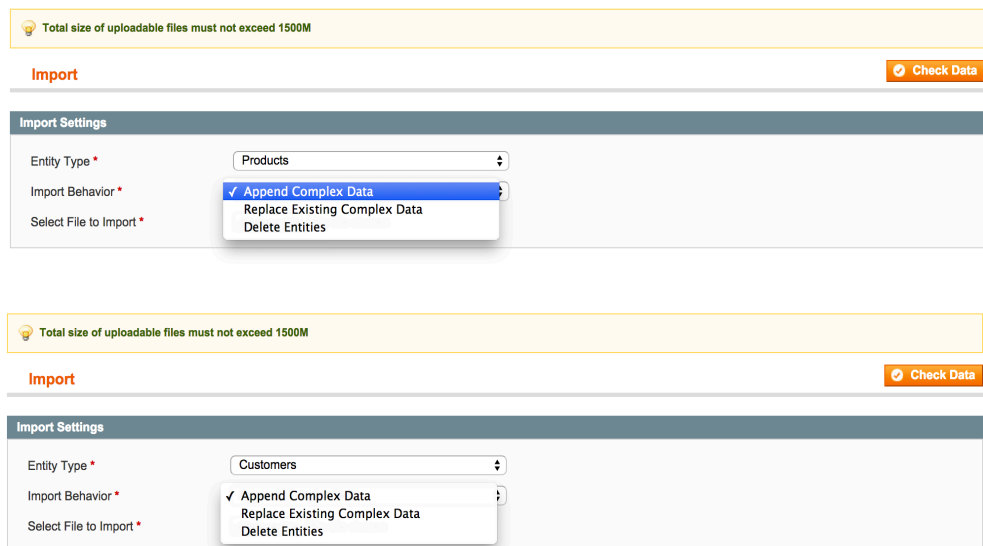


Figure 2.26 Admin panel product and customer import page

- Product and customer export



Figure 2.27 Admin panel product and customer export page

3 REQUIREMENT ANALYSIS

3.1 Requirement

The following are the requirements of the web shop application:

1. Theme
2. Product distribution service
3. Ordering and reservation service
4. Inventory service
5. Customer services
6. Marketing services
7. Payment services

3.2 Analysis

- Theme
Responsive design is a popular design approach, float elements will be widely used in CSS. Considering the support for tablet and mobile phones, we need use CSS media library, websites will have good layouts in different devices. Website need compatible with IE 10+, Chrome, Firefox, and Safari.
- Product distribution service
Website need includes two shipping methods. One is “pick up at store”, the other one is Itella smart post. With Itella smartpost, it can search pick up points by postcode or city name. The shipping fee is configurable.
- Ordering and reservation service
Products in the shopping cart can be checkout immediately or put in a wish list for checkout later.

- Inventory service
Product inventory can be added, updated. If a product out of stock, it will hide from the website.
- Customer services
Customers can register, login. It is also possible buy product without registration.
- Marketing services
 1. Customers can read receive the latest news about new products, discount products.
 2. Add social media links to promote the website, like Facebook, Twitter.
 3. Promotion rules like free shipping if order over 40€.
- Payment services
Website needs support PayPal, visa card, and master card. Support Nordic region bank payments, such as Nordea bank, Danske bank.
- Store configuration
 1. Multi-store, one in Helsinki, the other in Espoo.
 2. Multi-language, Finnish, Chinese, English.
 3. Possible to add CMS pages like contact us, company info, slider, etc.

4 IMPLEMENTATION

4.1 Magento installation

- Modify etc/hosts , Add “127.0.0.1 magento19.local.fi”
- Modify etc/apache2/extra/httpd-vhost.conf

```

<Directory "/Users/yulin/Sites/magento1.9/web">
  Options FollowSymLinks
  AllowOverride All
  Order deny,allow
  allow from all
</Directory>

<VirtualHost *:80>
  AddDefaultCharset UTF-8
  DocumentRoot "/Users/yulin/Sites/magento1.9/web"
  ServerName magento19.local.fi
  ErrorLog "/private/var/log/apache2/sites-error_log"
  CustomLog "/private/var/log/apache2/sites-access_log" common
</VirtualHost>

```

Figure 4.1 Virtual host configuration in local environment

- Restart apache server
Server need to restart to make virtual host configuration works.

- Create database, add sample data

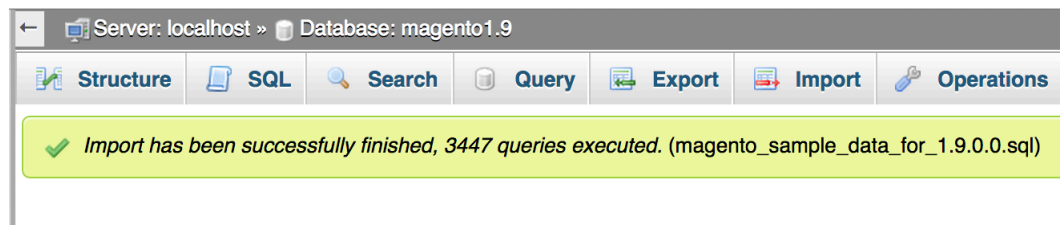


Figure 4.2 Create database, add sample data

- Localization

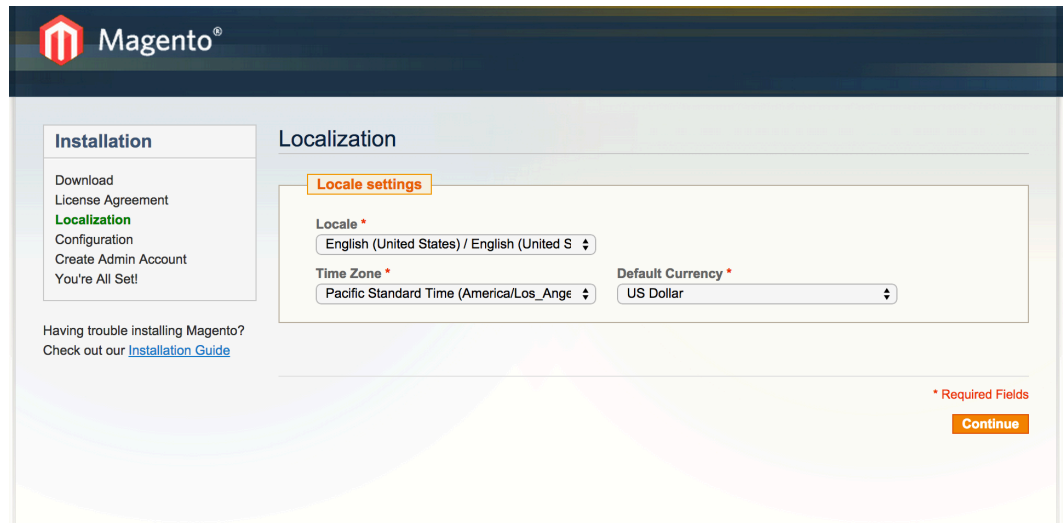


Figure 4.3 Choose website language, language also can be change later

- Set folder permission

Consider that there will be product image and other images upload to media folder. Media folder needs writable permission.

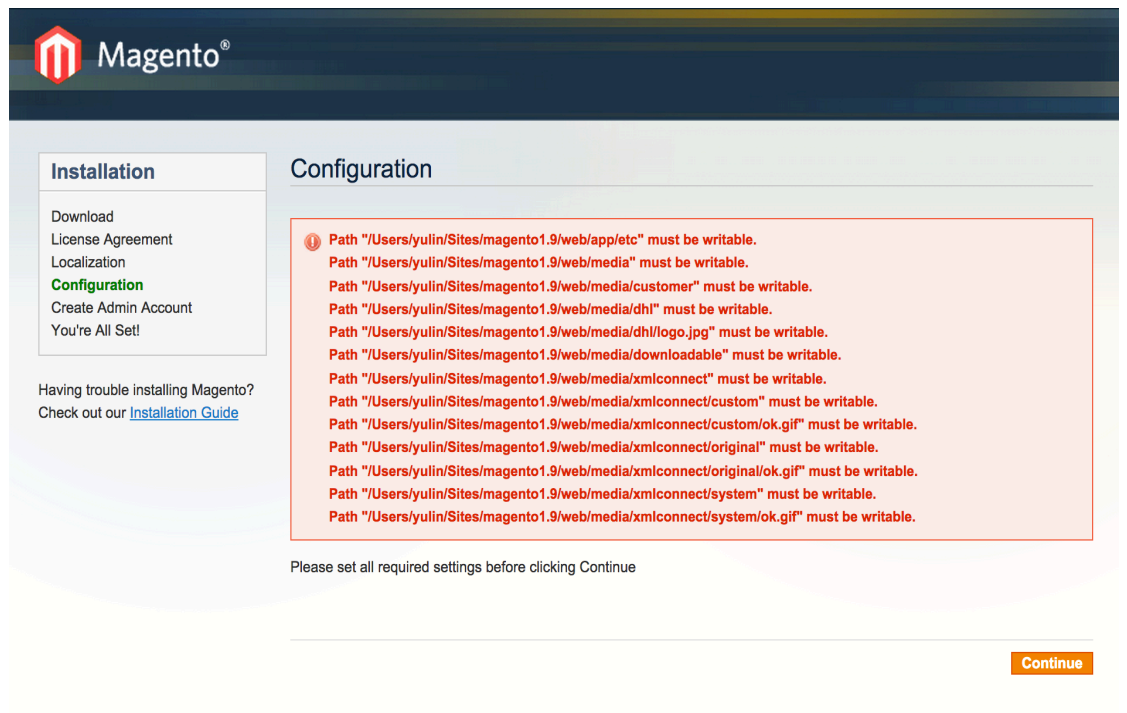


Figure 4.4 Folder permission warning page

- Configuration

Installation

- Download
- License Agreement
- Localization
- Configuration
- Create Admin Account
- You're All Set!

Having trouble installing Magento?
Check out our [Installation Guide](#)

Configuration

Database Connection

Database Type
MySQL

Host * localhost Database Name * magento

You can specify server port, ex.: localhost:3307
If you are not using default UNIX socket, you can specify it here instead of host, ex.: /var/run/mysqld/mysqld.sock

User Name * User Password

Tables Prefix

(Optional. Leave blank for no prefix)

Web access options

Base URL * http://magento19.local.fi/

Admin Path * admin

Additional path added after Base URL to access your Administrative Panel (e.g. admin, backend, control etc.).

Enable Charts
Enable this option if you want the charts to be displayed on Dashboard.

Skip Base URL Validation Before the Next Step
Check this box only if it is not possible to automatically validate the Base URL.

Installation

- Download
- License Agreement
- Localization
- Configuration
- Create Admin Account
- You're All Set!

Having trouble installing Magento?
Check out our [Installation Guide](#)

Create Admin Account

Personal Information

First Name * Last Name *

Email *

Login Information

Username *

Password * Confirm Password *

Password

Encryption Key

Magento uses this key to encrypt passwords, credit cards and more. If this field is left empty the system will create an encryption key for you and will display it on the next page.

* Required Fields

[Continue](#)

Figure 4.5 Database configuration page, create admin account page

- Folder structure

Code folder includes three types of code, Magento core, community module code, and customized module code. Design folder includes all templates, divided by admin panel template and frontend template. Etc folder includes database connection configuration and brief information of all modules.

Locale includes all translation packages. Skin folder includes admin panel CSS, images, and also frontend CSS, images.

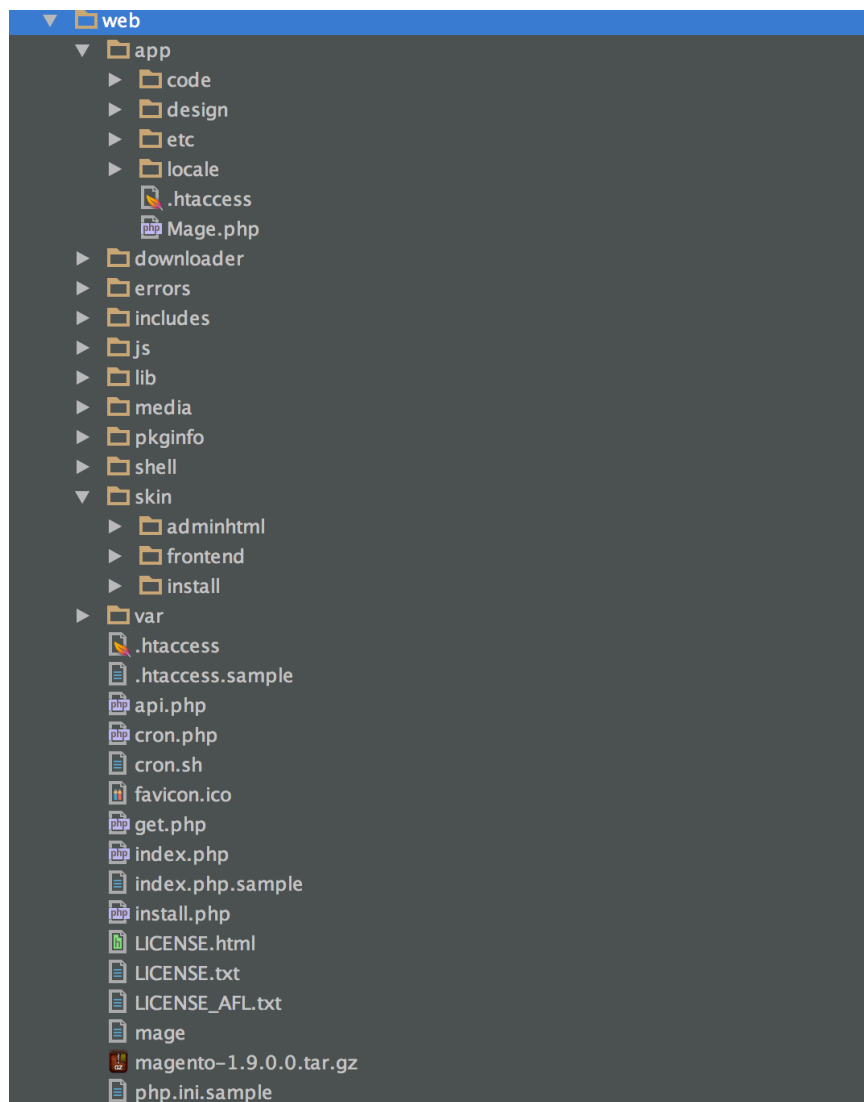


Figure 4.6 Project code folder structure

4.2 Frontend design

Make a Magento theme need use following available tools:

1. Templates (HTML content)
2. Layout (control the main content and sidebar position)
3. Block (make widget can be reused in different places)
4. Skin (images, CSS and block-specific JavaScript)

In this application, template, layout, and the block will use the Magento default theme, but CSS has been rewritten to make it responsive.

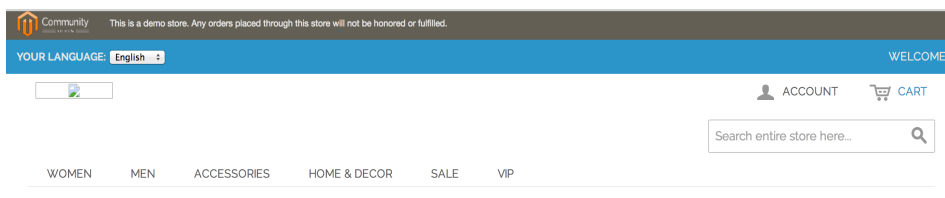


Figure 4.7 Home page

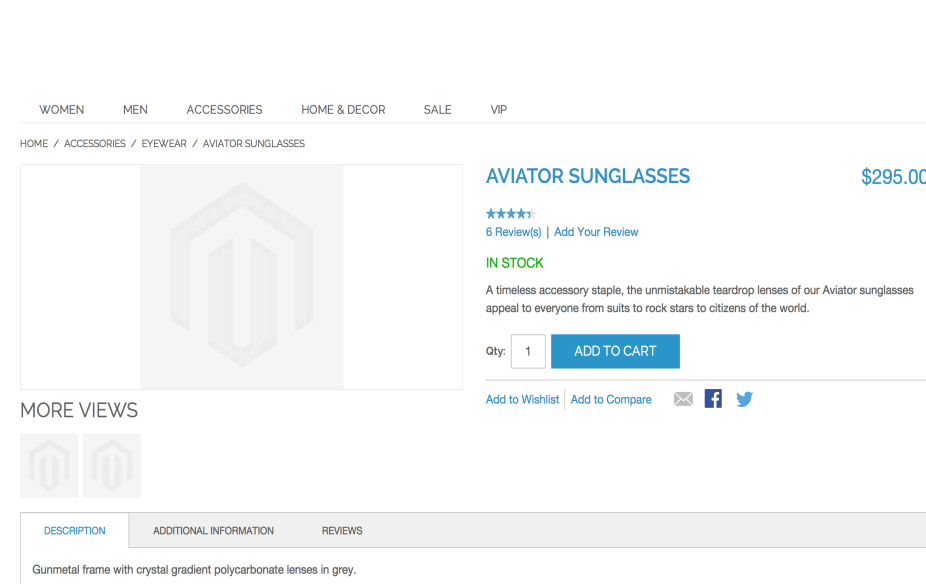




Figure 4.8 Product page

SHOPPING CART

PROCEED TO CHECKOUT

Aviator Sunglasses was added to your shopping cart.

PRODUCT	PRICE	QTY	SUBTOTAL	
 AVIATOR SUNGLASSES SKU: ac0000	\$295.00	1 Edit	\$295.00	

[EMPTY CART](#) [UPDATE SHOPPING CART](#) -OR- [CONTINUE SHOPPING](#)

DISCOUNT CODES [APPLY](#)

ESTIMATE SHIPPING AND TAX

COUNTRY * STATE/PROVINCE *

CITY ZIP *

[ESTIMATE](#)

SUBTOTAL	\$295.00
TAX	\$24.34
GRAND TOTAL	\$319.34

[PROCEED TO CHECKOUT](#)

Figure 4.9 Shopping cart page

CHECKOUT

1 BILLING INFORMATION

Select a billing address from your address book or enter a new address.

* Required Fields

Ship to this address

Ship to different address

[CONTINUE](#)

2 SHIPPING INFORMATION

3 SHIPPING METHOD

4 PAYMENT INFORMATION

5 ORDER REVIEW

Figure 4.10 Checkout page

4.3 Configuration

The store view has been saved

Manage Stores [Create Website](#) [Create Store](#) [Create Store View](#)

Website Name	Store Name	Store View Name
Another website (Code: b2b)	Cosmetics (Root Category: Default Category)	chinese (Code: chinese)
		suomi (Code: suomi)
	Electronics (Root Category: Default Category)	english (Code: en)
		suomi (Code: fi)
Main Website (Code: base)	Madison Island (Root Category: Default Category)	English (Code: default)
		French (Code: french)
		German (Code: german)

Figure 4.11 Multi store configuration

Store Email Addresses

General Contact		
Sender Name	<input type="text" value="Fusion"/>	[STORE VIEW]
Sender Email	<input type="text" value="Fusion@gmail.com"/>	[STORE VIEW]

Sales Representative		
Sender Name	<input type="text" value="Fusion Sales"/>	[STORE VIEW]
Sender Email	<input type="text" value="fusionsales@gmail.com"/>	[STORE VIEW]

Customer Support		
Sender Name	<input type="text" value="Fusion Support"/>	[STORE VIEW]
Sender Email	<input type="text" value="fusionsupport@gmail.com"/>	[STORE VIEW]

Figure 4.12 Email configuration

Currency Setup

Currency Options	
Base Currency	Euro

Figure 4.13 Currency configuration

Catalog Price Rules

Page 1 of 1 pages | View 20 per page | Total 6 records found

ID	Rule Name
7	Get up to 50% off on Candle holders
5	25% off on Cardigan
9	45% off on Boyfriend Jean
6	Get Briefcase for \$170 less
8	Get Travel wallet for \$150
10	Get Vase at \$80 less than the original price

Figure 4.14 Promotion rule configuration

Customer Groups

Page of 1 pages | View per page | Total 5 records found

ID	Group Name
1	General
0	NOT LOGGED IN
5	Private Sales Member
4	VIP Member
2	Wholesale

Figure 4.15 Customer group configuration

Shipping Methods

Fiat Rate
Table Rates
Free Shipping
Itella Express Flex
Itella Economy
Letter
Itella Express Business Day
Itella EMS (international)
Itella SmartPOST
Itella Express Business Day parcel (international)
Matkahuolto Pickup Parcel
Itella Priority (international)
Matkahuolto Delivery Parcel
Matkahuolto Local Parcel
Matkahuolto Nearby Parcel
Matkahuolto Bus Parcel
Matkahuolto Express Parcel
UPS
USPS
FedEx
DHL (Deprecated)
DHL

Figure 4.16 Shipment methods configuration

Payment Methods

Not sure what PayPal payment method to use? Click [here](#) to learn more.

PointPayment
Merchant Location
Paytrail / S-Pankki
Paytrail / Nordea Tilisiirto
Paytrail / Klarna Laskulla
Paytrail / Netposti
Paytrail / Paypal
Paytrail / Aktia
Paytrail / POP Pankki
Paytrail / Säästöpankki
Paytrail / Luottokunta
Paytrail / Visa
Paytrail / JCB
Paytrail / Collector
Paytrail / Jousto
Paytrail / Diners Club
Paytrail / American Express
Paytrail / Säästöpankki, Aktia, Nooa
Paytrail / MasterCard
Paytrail / Maestro
Paytrail / Klarna Osamaksulla
Paytrail / Ålandsbanken
Paytrail

Figure 4.17 Payment methods configuration

Manage Pages

Page of 1 pages | View per page | Total 7 records found

Title	URL Key	Layout
About Us	about-magento-demo-store	1 column
Customer Service	customer-service	3 columns
Enable Cookies	enable-cookies	1 column
Home page	home	2 columns with right bar
Home page	home	1 column
404 Not Found 1	no-route	2 columns with right bar
Privacy Policy	privacy-policy-cookie-restriction-mode	1 column

Figure 4.18 CMS page configuration

4.4 Module Development

The module is the core of the Magento. Any action on the site, whether it is in the foreground or background operation is implemented by the module. Modules can be thought as a container that can contain these items below: setting, database schema, rendering object, utility helpers, and data model or action controller. A module can contain all of these six can contain only a few of them, or even only one. All modules can be disabled or enabled. Each module can also create an XML file in the etc folder to save their configuration information.

4.4.1 Itella smartpost

The idea of this module is let customer can use itella post service in shopping process.

- It should have below features
 - Display pickup point base on postcode or shipping address
 - Search pickup point base on postcode or shipping address
 - Shipping price is configurable, price can be fixed or calculated base on product weight
 - Set free shipping price
- Create folder structure.

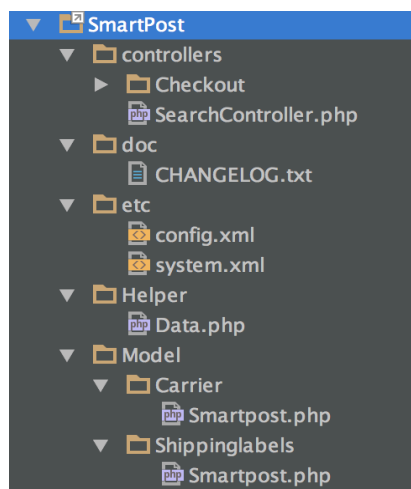


Figure 4.19 Itella smart post module folder structure

- In model, add itella web service, and method to fetch data from web service API.

```
protected $_code = 'itellaSmartPost';
protected $_productCode = '2106';
protected $_shippingLabelCode = 'itellaSmartPost';
CONST REST_URI = "https://ohjelmat.posti.fi";
CONST PICKUP_URI = "/pup/v1/pickuppoints";
```

Figure 4.20 Itella smart post web service url

- Request parcel pick up point by postcode or city name

```
protected function _getPointsByRest($requestData) {
    // Make the REST request
    $client = new Zend_Rest_Client( self::REST_URI );
    $result = $client->restGet( self::PICKUP_URI, $requestData ); // Zend_Http_Response object
    if ($result->isSuccessful()) {
        if(count(Zend_Json::decode($result->getBody())) > 0) {
            $points = $result->getBody();
        }
        else {
            /* in case REST client does not return any points we can use CURL.
            Page loading is slow with this method. */
            //$points = $this->_getPointsByCurl($requestData);
        }
        $points = Zend_Json::decode( $points );
    } else {
        //$this->_getPointsByCurl($requestData);
        //Mage::throwException(Mage::helper('smartpost')->__('Can not receive locations via REST, fallback to CURL'));
        Mage::throwException(Mage::helper('smartpost')->__('Can not receive locations via REST'));
    }
    /*
    if (isset($result->PickUpPointExternalResponse->Error->ErrorCode)) {
        Mage::throwException($result->FetchLocationSearchResponse->Error->ErrorDescription);
    }
    */
    if (count($points) == 0) {
        return null;
    }

    return $points;
}
```

Figure 4.21 Part code of get itella smart post pick up points

- In system.xml we add code to display fields in admin panel

- Calculate price base on product weight.

```

<price translate="Label comment">
  <label>Price</label>
  <comment>If weight steps is used, use multiple semicolon (;) separated values that matches with weight step
  <frontend_type>text</frontend_type>
  <sort_order>40</sort_order>
  <show_in_default>1</show_in_default>
  <show_in_website>1</show_in_website>
  <show_in_store>1</show_in_store>
</price>
<price_weight_steps translate="Label comment">
  <label>Weight steps for price calculation</label>
  <comment>Semicomma (;) separated (i.e. 2;5;10;15;30). If empty, steps are not used.</comment>
  <frontend_type>text</frontend_type>
  <sort_order>41</sort_order>
  <show_in_default>1</show_in_default>
  <show_in_website>1</show_in_website>
  <show_in_store>1</show_in_store>
</price_weight_steps>

```

Figure 4.22 display calculate price base on weight in admin panel

- Set free shipping price

```

<free_shipping_enable translate="label">
  <label>Free shipping with minimum order amount</label>
  <frontend_type>select</frontend_type>
  <source_model>adminhtml/system_config_source_enabledisable</source_model>
  <sort_order>60</sort_order>
  <show_in_default>1</show_in_default>
  <show_in_website>1</show_in_website>
  <show_in_store>1</show_in_store>
</free_shipping_enable>
<free_shipping_subtotal translate="label">
  <label>Minimum order amount for free shipping</label>
  <frontend_type>text</frontend_type>
  <sort_order>70</sort_order>
  <show_in_default>1</show_in_default>
  <show_in_website>1</show_in_website>
  <show_in_store>1</show_in_store>
</free_shipping_subtotal>

```

Figure 4.23 display free shipping price field in admin panel

- After config in system.xml, In Magento admin panel will get automatically generated layout

Itella SmartPOST		
Enabled	<input type="text" value="Yes"/>	[STORE VIEW]
Title	<input type="text" value="smartpost"/>	[STORE VIEW]
Method name	<input type="text" value="smartpost"/>	[STORE VIEW]
Price	<input type="text" value="2.50;5;6.50;7;7.50"/> ▲ If weight steps is used, use multiple semicomma (;) separated values that matches with weight steps (i.e. 2.50;5;6.50;7;7.50).	[STORE VIEW]
Weight steps for price calculation	<input type="text" value="2;5;10;15;30"/> ▲ Semicomma (;) separated (i.e. 2;5;10;15;30). If empty, steps are not used.	[STORE VIEW]
Free shipping with minimum order amount	<input type="text" value="Enable"/>	[STORE VIEW]
Minimum order amount for free shipping	<input type="text" value="100"/>	[STORE VIEW]

Figure 4.24 Itella smart post configuration page in admin panel

- Frontend search field

smartpost

smartpost

Search by zip code or city

– Select a pick-up point –

Pakettiautomaatti, Alepa Kivenlahti \$0.00

Pakettiautomaatti, S-Market Kivenlahdentie \$0.00

✓ Pakettiautomaatti, S-Market Olari \$0.00

Pakettiautomaatti, S-market Malminmäki \$0.00

Figure 4.25 Itella smart post search field in website frontend

4.4.2 Paytrail

The idea of this module is let customer can use various banking services in the Nordic area. Paytrail (Suomen Verkkomaksut) web service contains payments to all Finnish banks, major credit and debit card payments. API document can be found at <http://docs.paytrail.com/en/>.

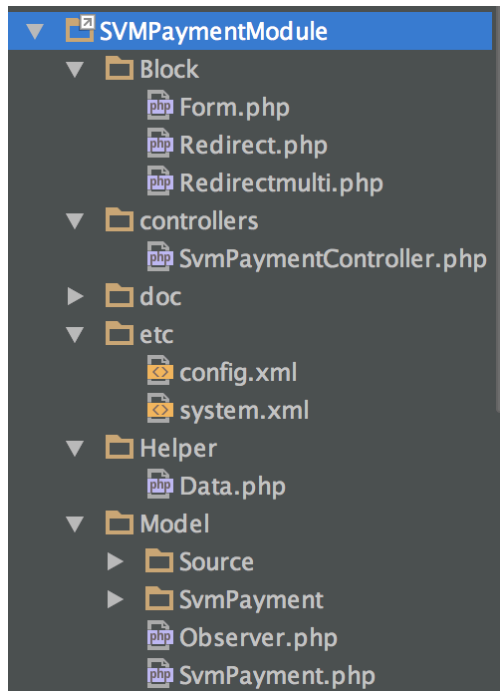


Figure 4.26 Paytrail folder structure

- In the model, add paytrail web service, and method to fetch data from web service API.
- In the controller, add redirect action, because transaction will not finish in Magento, it will first redirect to paytrail, use paytrail security connection to finish the transaction.

```

* Redirect user to Paytrail
* @return void
*/

public function redirectAction() {
    try {
        $svmPayment = Mage::getSingleton("svm/svmPayment");

        if(Mage::getSingleton('checkout/session')->getLastRealOrderId()) {
            $order = Mage::getModel("sales/order");
            $order->loadByIncrementId(Mage::getSingleton('checkout/session')->getLastRealOrderId());

            if ($svmPayment->getOrderEmailStatus() == 0) {
                $order->sendNewOrderEmail()->addStatusHistoryComment(
                    Mage::helper('svm')->__('Order confirmation sent.') . " " .
                    Mage::helper('svm')->__('Client redirected to the payment service')
                )
                ->setIsCustomerNotified(true)
                ->save();
            }
            else {
                $order->addStatusHistoryComment(Mage::helper('svm')->__('Client redirected to the payment service'))
                ->save();
            }

            $quote = Mage::getModel('sales/quote')->load($order->getQuoteId());
            $quote->setIsActive(true)->save();
            Mage::getSingleton('checkout/session')->setQuote($quote);
            Mage::getSingleton('checkout/cart')->setQuote($quote)->save();
        }
    }
}

```

Figure 4.27 Redirect user to Paytrail

- In system.xml we add code to display fields in admin panel, use paytrail service need apply account first, fill merchant id in Magento admin panel to active paytrail service.

```

<merchant_id translate="label">
    <label>Merchant ID</label>
    <frontend_type>text</frontend_type>
    <sort_order>5</sort_order>
    <show_in_default>1</show_in_default>
    <show_in_website>1</show_in_website>
    <show_in_store>1</show_in_store>
</merchant_id>
<merchant_secure_code translate="label">
    <label>Secure Key</label>
    <frontend_type>obscure</frontend_type>
    <backend_model>adminhtml/system_config_backend_encrypted</backend_model>
    <sort_order>7</sort_order>
    <show_in_default>1</show_in_default>
    <show_in_website>1</show_in_website>
    <show_in_store>0</show_in_store>
</merchant_secure_code>

```

Figure 4.28 xml configuration to display paytrail fields in admin panel

- After configuring in system.xml, the layout will automatically generate in Magento admin panel.

Paytrail		
Enabled	<input type="text" value="Yes"/>	[STORE VIEW]
Title	<input type="text" value="Verkkopankki- tai korttimaksu (Paytrail)"/>	[STORE VIEW]
Merchant ID	<input type="text" value="13466"/>	[STORE VIEW]
Secure Key	<input type="text" value="*****"/>	[WEBSITE]
Interface language	<input type="text" value="Finnish"/>	[STORE VIEW]
New order email is sent	<input type="text" value="When payment is successfully confirmed"/>	[STORE VIEW]
New invoice email is sent	<input type="text" value="When payment is successfully confirmed"/>	[STORE VIEW]
Show Checkout Image	<input type="text" value="Yes"/>	[STORE VIEW]
Checkout Image Columns	<input type="text" value="12"/> <small>▲ Number of bank logos displayed per row</small>	[STORE VIEW]
Horizontal Display of Checkout Image	<input type="text" value="Yes"/>	[STORE VIEW]
New Order Status	<input type="text" value="Pending"/>	[WEBSITE]
Send order details to Paytrail	<input type="text" value="No"/> <small>▲ If you enable this feature all order items and customer data will be sent to Paytrail. This is needed for getting detailed reports from Paytrail and for using payment methods that requires customer data like Klarna etc.</small>	[STORE VIEW]
Automatic pending order cancellation	<input type="text" value="No"/> <small>▲ By enabling this option you can set the life time for pending orders that hasn't been verified as paid.</small>	[GLOBAL]
Sort Order	<input type="text"/>	[WEBSITE]
Debug mode	<input type="text" value="Yes"/>	[STORE VIEW]

Figure 4.29 Paytrail fields in admin panel

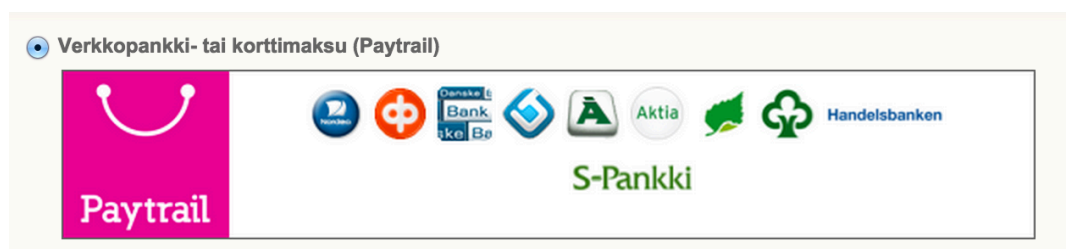


Figure 4.30 Paytrail in website frontend

From module development, it is obvious to know that Magento module is based on MVC structure. Magento also provides some predefined component. Magento xml defined the structure of modules.

5 TESTING

5.1 Browser compatibility test

Used <http://browserbite.com/> to test browser compatibility, web pages display well in IE 10+, Chrome, Firefox and Safari.

5.2 Magento shopping process

MY DASHBOARD

Thank you for registering

Hello, **yu lin!**
From your My Account Dashboard you have the ability to view a snapshot of your recent account activity and update your account information. Select a link below to view or edit information.


ACCOUNT INFORMATION

CONTACT INFORMATION EDIT	NEWSLETTERS EDIT
<i>yu lin</i> <i>linyusos@gmail.com</i> Change Password	<i>You are currently not subscribed to any newsletter.</i>

Figure 5.1 Registration success

SHOPPING CART [PROCEED TO CHECKOUT](#)

French Cuff Cotton Twill Oxford was added to your shopping cart.

PRODUCT	PRICE	QTY	SUBTOTAL
 FRENCH CUFF COTTON TWILL OXFORD <i>SKU: msj000xs</i> <i>Color: White</i> <i>Size: XS</i>	€190.00	1	€190.00

[EMPTY CART](#) [UPDATE SHOPPING CART](#) -OR- [CONTINUE SHOPPING](#)

DISCOUNT CODES

 [APPLY](#)

ESTIMATE SHIPPING AND TAX

COUNTRY • **STATE/PROVINCE** •

United States ▾ Please select regio ▾

CITY **ZIP** •

[ESTIMATE](#)

Figure 5.2 Add products to shopping cart success

1 BILLING ADDRESS

First Name *
yu

Last Name *
lin

Country *
Finland

Zip/Postal * State/Province *
Please select region, state or province

City *

Address *

Telephone * Fax


Save in address book

2 SHIPPING METHOD

free shipping
Fixed €5.00

3 PAYMENT METHOD

Verkkopankki- tai korttimaksu (Paytrail)



Paytrail

☑ Cash On Delivery


ORDER REVIEW


PRODUCT NAME	PRICE	QTY	SUBTOTAL
FRENCH CUFF COTTON TWILL OXFORD <i>Color:</i> White <i>Size:</i> XS	€190.00	1	€190.00
Subtotal			€190.00
Shipping & Handling (free shipping - Fixed)			€5.00
Grand Total			€195.00

Check this checkbox if you want to add gift messages.

Place Order

Figure 5.3 Checkout page include account info, shipping method, payment method and order info.

 Suomen Verkkomaksut on nyt Paytrail. Suomeksi | In English | På Svenska

 TESTAUSMAKSU Käytä pankkien [TESTITUNNUKSIJA](#)


MAKSUN TIEDOT


Maksun saaja/toimittaja: Demo Yritys ([Näytä tiedot](#))


Tilausnumero: 145000010


Maksun summa: **195,00 €**


VALITSE MAKSUTAPA



























Maksun vastaanottajana näkyy Paytrail Oyj. Maksun tilityksen saaja: Demo Yritys.

Figure 5.4 Redirect to payment page success


Credit union online payment
Suomeksi [In English](#)

1 Authentication
2 Asking the key number
3 Payment Approval
4 Fee paid

Enter your username and password in the fields below and press the Continue button. OP-network to use secure connections and its use is completely safe. OP-network gives you access to a credit union by making an online service agreement with the cooperative banks.

User name

Password

Pause
Continue »

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Figure 5.5 Use paytrail sandbox account credential to test payment

YOUR ORDER HAS BEEN RECEIVED.

THANK YOU FOR YOUR PURCHASE!

Your order # is: [145000011](#).

You will receive an order confirmation email with details of your order and a link to track its progress.
Click [here to print](#) a copy of your order confirmation.

CONTINUE SHOPPING

Figure 5.6 Get order confirmation

MY DASHBOARD

Hello, yu lin!

From your My Account Dashboard you have the ability to view a snapshot of your recent account activity and update your account information. Select a link below to view or edit information.

RECENT ORDERS [VIEW ALL](#)

ORDER #	DATE	SHIP TO	ORDER TOTAL	STATUS	
145000011	3/29/2015	yu lin	€195.00	<i>Processing</i>	VIEW ORDER REORDER
145000010	3/29/2015	yu lin	€195.00	<i>Canceled</i>	VIEW ORDER REORDER

Figure 5.7 View order in my account dashboard

6 CONCLUSIONS

This project is a good practice on Magento, it is able to fully meet customer demand for e-commerce, customers can register, log in, view products, add to cart, checkout, review orders and so on.

By responsive design, it offers a good user experience in different devices.

This application not only offers international payment methods like PayPal, Visa, Master Card, and shipment methods like DHL, UPS. Through the development of modules, delivery methods like Itella smart post, payment methods like Nordea bank, Danske bank have been integrated with this application. Those modules achieve localization needs.

The Magento structure is based on Zend framework. Its MVC structure has a lower degree of coupling between modules and makes module development is quite convenient.

7 WHAT CAN BE IMPROVED

- Performance issues

Magento server requirements are relatively high, when product categories and product number goes higher, might need to use redis or memcache applications to help improve performance.

- Learning cost of Magento is high

Customers reflect that Magento admin panel is powerful but complex to use, takes a long time to learn how to use it.

- Subsequent module updates and Magento version release update

Most of the current e-commerce platform update fast, Magento is no exception, Magento update twice a year approximately, the corresponding module also needs to be updated.

- Promotional rule

Magento offers some basic promotional rules, such as 'buy 100 return 10', 'buy three get one free', 'coupon codes'. But customers may have more complex marketing strategies, which need to do more module development.

8 REFERENCES

/1/ April 2014 ecommerce Survey

<URL: <http://tomrobertshaw.net/2014/04/april-2014-ecommerce-survey/>>

/2/ All major internet retailers in Europe

<URL: <http://www.retail-index.com/ERetail.aspx/>>

/3/ Magento REST API

<URL:

http://www.magentocommerce.com/api/rest/authentication/oauth_authentication.html>