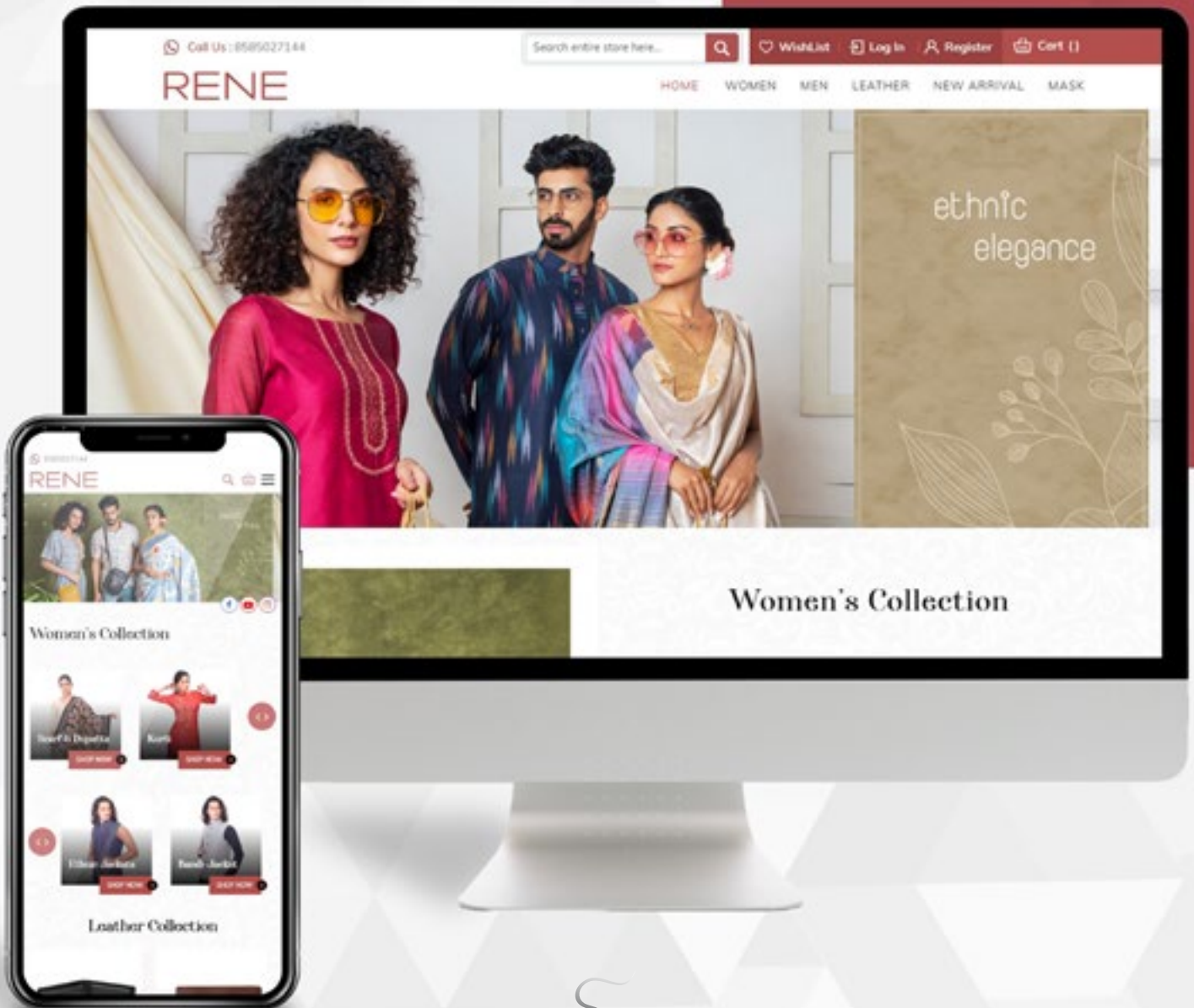


# RENE

How Webguru Infosystems upgraded the existing website of its client (Rene India) built on Magento's 1.x version to Magento's 2.x version with several enhancements.

## A Multi-Store Ecommerce Portal Development

# A Case Study



# An Overview

Rene India is a known brand for offering high-quality and fashionable apparel and accessories across a multi-faceted range comprising ethnic wear, festive wear, casual wear, and ceremonial wear. Based in India, the company caters to the growing demand for men's and women's fashion wear both in the domestic and overseas markets.

The company had an existing Magento-based website running on the 1.9 version. Since Adobe (owner of the Magento e-commerce platform) had upgraded Magento to a higher version (2.x), it stopped providing support to the earlier version (1.x) in terms of security updates and other extensions. Hence, the company was concerned about the site's security and other features and had approached Webguru Infosystems (a leader in developing premier business solutions) to upgrade its existing Magento 1.x based website to the one based on Magento 2.x. The experienced team at Webguru got into the act and after braving a few challenges, was able to meet the business objectives of the client.



# The Proposal

At the outset, the proposal was to develop five storefronts catering to customers from the USA/Canada, UK/European Union, Australia, UAE, and India. However, later, the client settled for only two storefronts; India and Overseas. For Overseas, USD was chosen as the default currency.

We proposed to redevelop the existing website with a clean, intuitive, and contemporary layout while focusing on the following aspects:



- Quick loading and easy navigation of the website to deliver a better user experience. To enable quick loading, we stayed clear of incorporating heavy images, flashes, and unnecessary scripts, among others.
- Enable the website to run seamlessly across handheld mobile devices and browsers; Chrome, Firefox, Opera, and Safari.
- Use a readable font typeface for better user engagement.
- A well-defined footer to attract user traffic.
- Use DIV based coding to make the layout SEO friendly.



- Improve the functionality of the website in the following ways:
  - › Allow the administrator to upload a normal product and then create a bundle product consisting of several simple products.
  - › Develop a secure panel for the site administrator wherein he or she may manage the items uploaded to the website, set images, prices, and other details.
  - › The administrator can set a discount % at the product and category level and set coupon codes for individual storefronts.
  - › A newsletter signup feature to be integrated using MailChimp services for promotional purposes.
- In their existing website, the client was maintaining the same product stock for all countries. We suggested that they could maintain different stock and pricing for different countries, and even promote a product in a particular country.
- We proposed the addition of several features like E-Gift Card, Affiliate, etc., to promote the brand and boost the sale of products.
- Although the client (Rene India) was running a Magento based website, it was concerned about the maintenance. We assured them of offering annual maintenance and support for the website.



# The Workflow

The redevelopment/upgradation of the portal began with designing a new layout and navigation as a prototype. Thereafter, the front-end was developed comprising activities such as webpage coding and integration of the latest front-end technologies to enhance UI. Further, the core features were developed by altering the default database architecture and configuring the backend control panel.

Since we followed the Agile methodology, beta testing and debugging were conducted alongside development to deliver a custom-built solution. Moreover, we interacted with the client throughout the development and testing phases and built the website based on their feedback.

To secure the website against threat actors, the following steps were undertaken:

- Input data validation was achieved through JavaScript (client-side) and PHP (server-side). In case JavaScript is disabled by a user, the data to be validated using PHP.
- Guard against Cross-site scripting attack (XSS) by using the Escaper method in the PHTML template files to sanitize the HTML/JSON based output.



- Cross Site Request Forgery (CSRF) attack: If a legitimate user logs into the account and visits any malicious website, then the attacker may trick the user to do some unwanted action. To prohibit such an attack, we have implemented some security protocols like :
  - › Token-Based Mitigation : We enabled the encrypted Token generation feature from the Magento 2 framework. As a result, for each user and session, an encrypted Token is generated and added to the URL.
  - › SameSite Cookie Attribute : This cookie attribute prevents the browser to send a cookie along with Cross-site scripting.
- Prevented SQL injection attacks by performing all database queries using PDO (abstract class/layer) and parameterizing queries and prepared statements.
- Prevented scripts from accessing files from arbitrary directories.
- Errors were handled by performing exception handling through try/catch blocks. For errors occurring inside the try block, the exceptions were processed in the catch block.
- Session data were protected by encrypting the information stored in the session.

Export of data comprising customer data, product data, and order data from the existing website to the new Magento 2.x based website was done.

## Technologies used

Our technology stack comprised the following:

- » Programming language : PHP7
- » Web server : Apache
- » Database : MySQL 5.7
- » Operating system : Linux
- » CMS : Magento 2
- » Scripting and Interface : HTML 5.1, CSS 4, and JavaScript/JQuery





# Challenges faced

While working on the project, our developers faced quite a few challenges in various phases. However, during the course of redevelopment/upgradation, these challenges were addressed with the cooperation and support of the client. The challenges faced in various phases are as follows :

## Phase 1

**Data Migration** : We had to migrate the theme, product, and security features from the existing storefront built on Magento 1.9 and PHP 5.6 versions to Magento 2.3.4 and PHP 7.2 versions respectively, and integrate them with the new design template. This created a challenge of sorts as the product images in the older version were large, which led to slowing the uploading speed of the server. We suggested to the client to resize the product images to fit into the new template and meet the width-height ratio. This was done to avoid any distortion to the product images post-migration.



## Phase 2

**AWS Setup and IP Tracking :** The next challenge was related to set up the architecture on the AWS server. Since AWS provides a raw server, we had to configure it by fixing the server compatibility issues related to the PHP version and installing various Magento and PHP based libraries and extensions. Thereafter, the IP detection issue was addressed. According to this, when the website is opened from India, the users will see the Indian storefront showing INR as the default currency and when opened from outside India, the users will see the storefront with USD as the default currency. The client wanted an auto switchover of currencies instead of the default feature in Magento wherein users have to choose a specific currency from the dropdown menu. This led us to the path of detecting the IPs of the users' systems and redirecting them to reflect the 'correct' currency (INR for India and USD for overseas) based on the location.

This activity took a while as the existing site had a lot of robots, automatic clicks, and crawlers. Since each of these elements had an associated IP address, the limit offered by any free IP checking tool (Maxmind, etc.) used to get overwhelmed. As a result of such erroneous IP returns, the site began to malfunction after a certain time. To address this issue, our development team brainstormed to come up with changes at the coding level to negate the crawlers and robots from overwhelming the IP verification process.

Initially, we began using a third-party software tool to address the issue. However, the software used to search using the MDB file format containing the location and IP address, which took a lot of time for the website to load. To address the issue, our team built a plug-in that received the IP address quickly from another server through 'handshaking'.





## Phase 3

**Website Speed :** Since the existing site was quite slow we thought of leveraging the cache memory to speed up things. As a result, we installed an open-source web application accelerator called Varnish cache to store files containing static content (images, text, CSS, etc) to reduce bandwidth consumption and response time for any equivalent subsequent requests. And to increase the quantum of content in the Varnish cache memory, the team was asked to open every page 'once' after activating the cache memory. This led to a significant increase in the website loading speed (from 19 - 27 seconds to mere 3 - 4 seconds.)

Since Magento requires a lot of resources at the backend to function and the fact that we used the Varnish cache to speed up loading, we found the images were fully displayed only when they were refreshed at the time of loading. Upon investigation, our team found it to be a jQuery issue, which was resolved after sending the jQuery to the footer section.

### Result

At the outset, the loading speed of the existing website used to vary between 19 to 27 seconds, which can be termed as extremely slow. However, after upgrading the website to Magento 2.3.4 version, the speed of loading increased significantly (just 3 to 4 seconds.) thereby boosting the user experience. Besides, all security features and other enhancements were incorporated for standard regulatory compliance and the website became operational in the new version to the satisfaction of all.

### Conclusion

The website for Rene India was successfully upgraded and made operational on Magento 2.3.4 version as per the project objectives. In doing so, the website was tested rigorously at every phase to fix glitches/issues and ensure it meets the project objectives. To make the upgradation/redevelopment possible, team Webguru would like to thank the client for providing constant support and guidance.

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