

DESIGN AND DEVELOPMENT of AN INTERNET BASED FINANCIAL INFORMATION PLATFORM

The Customer

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2 OVERVIEW

FARWELL'S CUSTOMER is looking to have a platform designed and developed for them to consolidate in one portal; financial instruments and business support services available in countries in order to seal the knowledge gap on financial and business support services available to MSME enterprises. It is envisaged that the platform will be a robust web application that contains financial instruments from different financial service providers, Business development support services and various resources from FARWELL'S CUSTOMER. It is thus key that the information is presented in a user friendly manner and mechanisms incorporated to make searching and filtering data possible for users to narrow down data and review search results.

It is anticipated that the platform will attract users such as enterprise owners, policy-makers, project managers, browsing financing and service providers, development & commercial Financing Providers, insurance providers etc.

Whilst the project will start off with a one country pilot, the web application should be developed with the infrastructure that supports seamless rolling out of the project to other countries.

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3 USER JOURNEY

3.1 Accessible Information Before Registration

All public user levels will have free access to Public level information on the Country platform. This includes: view of all functionality tabs,

- simple alphabetic A to Z / Z to A sorting of all financing instrument and support service provider public data,
- News and events,
- Information pages,
- Resources directory sortable in simple alphabetic order A to Z / Z to A.

Unregistered Public users will be able to complete the “Contact us” facility but will not be able to create or change records on the database nor use any of the other facilities on the Country platform without first completing the 1st Level Registration.

3.2 1st Level Registration

1st Level Registration will be a short data capture of a few basic data points about the user. This could change from country to country as it will be guided by local practice.

The first level registration form will be a brief form with the following fields:-

1. First Name
2. Last name / Family name
3. Email
4. Phone number
5. Type of user – Categories will be presented in a dropdown for the user to select.

Upon submitting this information they will receive and activate the account and log in. At this stage they will have access to full filtering and search functionalities of the databases and Resource pages, Subscribe/Unsubscribe for News, Blogs, etc...

Upon filtering and narrowing down to a specific service provider that they wish to explore, their view will include the “Go to Provider” call to action to click on and get redirected to the service provider’s website.

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3.3 2nd Level Registration

When a User clicks on the “Go to Provider” button he/she will be requested to complete a **Level 2 Registration** details where further information will need to be filled. Second-level registration includes First-level registration data as well as additional data (to be defined by FARWELL’S CUSTOMER).

The Go to Provider call to action will be linked to the providers own web site or their official “agents” contact details through the “Go to provider” or Visit Website button. There will be *Report broken link* option for the user to report the broken link should the website be unavailable upon clicking on *Go To Provide / Visit Website*.

At this point, there will be a “Report broken link” button in case the click-through facility does not work. The user’s report will send an alert to the site admin to check on the broken link.

Additionally, the user may at this point, interact with the Newsletter subscription pop up incase they have not subscribed to the newsletter.

3.3.1 Alternative Service Provider’s Contact

We’d propose having the service providers contact made available in the FARWELL’S CUSTOMER platform to ensure the users get full value incase the service provider’s link is broken or the product is not available in the website.

We note that in Kenya not all bank products are published on the website and it would be useful for the user to have an email or phone number to call and enquire.

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4 PLATFORM USER ROLES AND RIGHTS

The system Users will be as follows:

4.1 Public Users-Unregistered

- Can access all publicly available content on the platform
- Can view all functionality tabs
- Can use the simple sorting feature to order financial instruments A - Z / Z - A
- Can Access News and Events, resource directory and other informational pages and can sort data in alphabetical order where this applies

4.2 Public Users – Registered

- Can access all the data in the website
- They will be able to use the smart search and filter features to narrow down their searches.
- Can click through to Go to Service Provider

4.3 Financing and Business Support Service Providers

- Can register and submit application on the platform to be included on the platform.
- The application will be received by the country platform administrator for review and approval.
- If their application is verified and approved, they will be notified by email and will receive login credentials to be able to login and populate their services on the financing providers backend view. Once done they will submit this for review publishing by the Country administrator.
- In case of any revisions required they will be prompted to make edits and resubmit. These notifications will come via email and a link to the platform where they can log in and view comments and make necessary changes and resubmit.

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- They will be able to see status of all their instruments on the platform and make changes where required. Any changes made will be submitted to the country administrator for review and publishing.

4.4 Country Platform Administrator

The Country platform administrator will be verified and approved by the FARWELL'S CUSTOMER Super-Administrator level. They will have rights

- To read, write / create /edit / delete general pages content
- To review and approve financing and service providers applications for their institutions and instruments to be added on the platform
- Review and publish or revert with comments to be incorporated before publishing of the instruments and services submitted by financing service providers.
- To access analytics access at the Country platform level.
- To add Resources, News and Events, Fraud and scam updates, Languages for titles, Look-up tables, Filter and search criteria, Content.
- They may also introduce additional information pages and notify the FARWELL'S CUSTOMER Super Administrator.

4.5 FARWELL'S CUSTOMER Super Administrator

This role will have global rights to read, write and analytics access and can block Country platform access under certain circumstances such as malicious events.

4.6 Communication and Notification Between Financing Service Provider and the Country Platform Administrator

During content addition and publishing, communication between the financing service provider and the country platform administrator will be facilitated within the platform by a comments section where for example the country platform admin can enter comments on what edits need to be made by the service provider for their submissions to be complete for publishing.

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The service provider will see these comments and make the necessary changes and submit back for review and publishing. They may also put a comment back to the country platform administrator.

4.6.1 Instrument Status

The status of facilities will change as necessary e.g. When submitted the status of an instrument will change to under review and will be shown in a different colour. When reviewed and published the status will read published and the colour will change to say green. Should edits be required, the status will change to reviewed – edits required and will be in a different color.

4.6.2 Notification and Communication Logs

Notifications will happen via email.

A log of communication will always be available for any changes made.

4.7 Data Display

4.7.1 Ability to Search by Specific Financing Provider

To manage the amount of data presented, users will be able to filter and find credit facilities by financing service provider and view the requirements of each facility. If they compare the facilities data and find one that interests them, they will click on a call to action button (Go to Provider). The call to action will be set as a goal on the website's Google analytics in order to measure the number of hits and conversion rate. Click throughs will be considered converted goals.

4.7.2 Filter Functionalities

We will incorporate filter capabilities to help a user narrow their search. For example financing providers instruments can be arranged based on the following:

- Based on lowest APR
- Based on most popular – i.e. measured by number of clicks on the Go to Provider call to action.
- Based on the user's favourites – based on the financing provider that the user selects most in their history.

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- Based on cheapest monthly payments.
- Based on rating by users on the platform. At the end of the display of loan product features and benefits, we could incorporate a rating.

4.8 Enhanced Search Functionality

We propose to provide search functionality by incorporating a plugin to increase the depth of the search function so that users get as much value as possible from the websites' content when they submit searches.

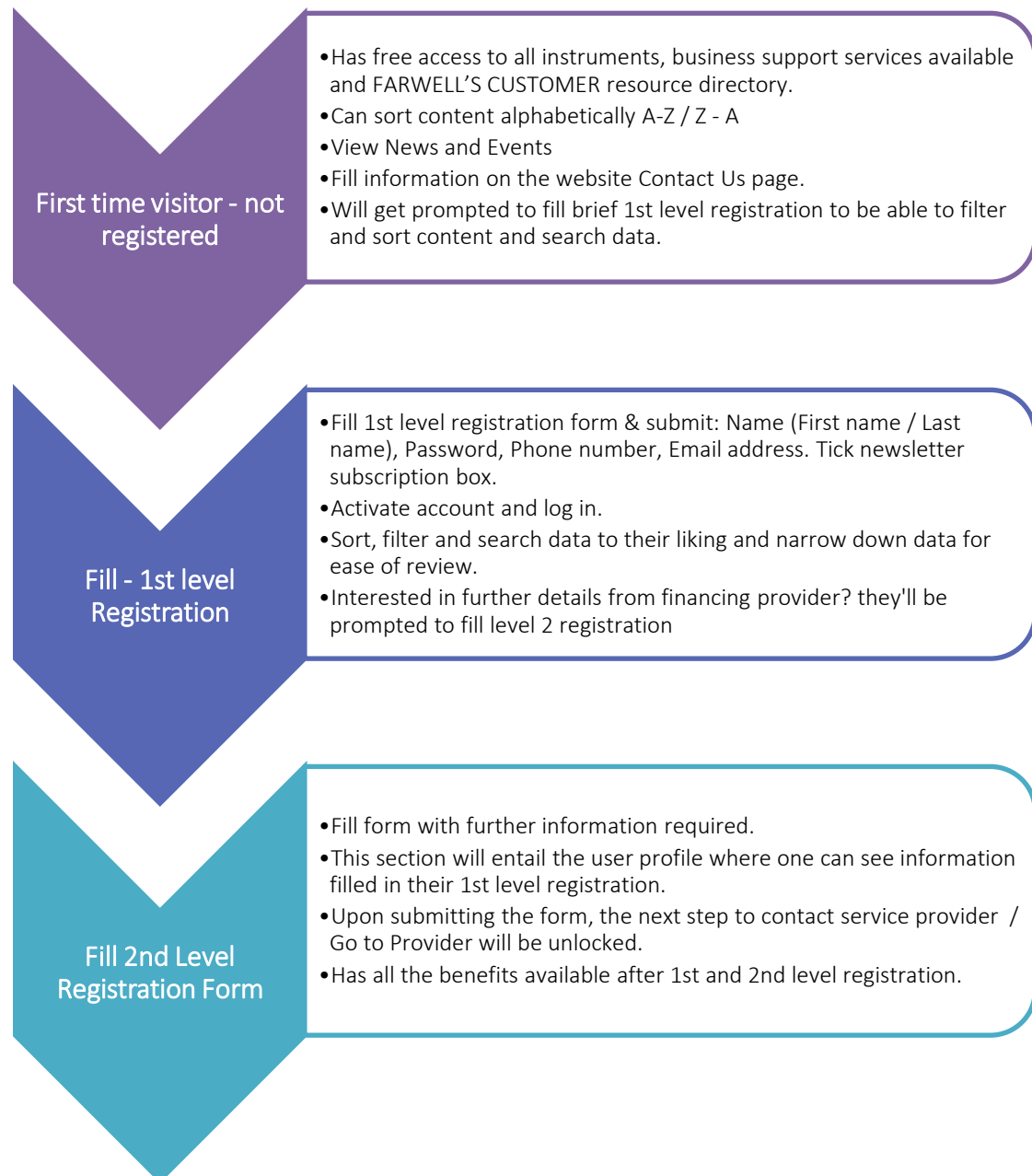
Among other value adds, an enhanced search will enable the sites to offer auto complete suggestions as one keys in search words and offer automatic corrections of word searches. The benefit of this is that it would reduce chances of website users fully typing in a search word with a typo and having no results displayed.

An exhaustive list of benefits that would be provided by the search plugin are as follows:

- Choice search columns – that enables us to define where the search function on each page should draw content from to display results.
- Flexible order results – This would be helpful for determining the search results to be shown at the top when users search.
- Using a relevance algorithm for the final classification – would be helpful for ensuring the results displayed are relevant to the search.
- Several systems to display results (pagination, trigger or infinite scroll)
- Highlight search terms, or not
- Automatic correction of searches
- Autocomplete option and automatic addition of words in the index
- Manage blocks to display in the SERP
- Ability to write an exact search with words in quotation marks
- Opportunity to show the results of specific categories

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4.9 A glimpse of the user journey and useful tools:



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5 WEBSITE FEATURES

5.1 Tooltips Features

We recognise that the platform may have language that users may deem to be technical jargon example on 2nd level registration and the fields may need explanations for the entrepreneurs to understand and give the correct information. We propose to have tooltips that appear when one hovers over the field titles.

5.2 SMS Based Account Activation

Upon regsiteing, entrepreneurs will have a one time password sent to their phones to enter on the platform and activate their accounts. This helps in swift user onboarding as it solves the problem of activation emails ending up in Spam folders and sometimes getting blocked and thereby preventing users from completing their registration.

5.3 Monitoring Tools and Techniques to Help Keep Track

The system will have within it, tools to record and track key information such as:-

- information indicating contact has been made between the BDSPs and the companies that have applied for support.
- the businesses / companies the BDSPs are working with.

5.4 Resources

Website visitors will be able to access the FARWELL'S CUSTOMER resources which will be both local files as well as external links to other FARWELL'S CUSTOMER resource portals.

Website visitors who have completed 1st level registration will be able to filter and search resources.

5.5 Multilingual Functionality

The platform will have a multilingual functionality to enable users to select and view site content in their language of choice between English, French, Swahili and Portuguese.

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The platform will be built on Laravel which is friendly for a multilingual site as it is for scalability purposes.

A template with the common field names and menu items will be provided to the country administrator to translate in the various languages.

For the dynamic data, when being filled in there will be a mandatory field to specify the language.

Assumption – each language content will be provided by FARWELL'S CUSTOMER as fully confirmed and accurate translated text.

5.6 Track Record

5.6.1 Stats section sharing the Financing MSME Gateway in numbers

Over time, the web application will display numbers that demonstrate growth and impact by showcasing the following:-

- The number of users reached, the number of enterprises supported in the past year.
- Spread of industries reached.
- Enterprise owners' feedback on the impact of the Business development support on their businesses and bottom line can be shared on the website testimonials section to encourage other entrepreneurs to apply or to implement the recommended actions in order to realise the benefits.

5.1 Form Security

Forms on the platform will be secured by use of captcha which is a program designed to protect against spam bots by generating tests that only humans can pass.

5.2 Take a Tour Feature

We propose to incorporate a take a tour video that highlights key features of the website and the business profile; what one stands to gain if they register and that the information keyed in helps in providing data customized for their business size and industry.

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5.3 Visual Feature with % of Profile Filled

As a user fills up their profile, they will see a tracker that indicates a % of the profile that has been filled a nudge encouraging them to complete the profile.

5.4 Country Reach – Platform Scalability to Other Countries

Careful consideration will be taken to ensure the platform is scalable to different countries needs. For each country it is expected that there will be different criteria for defining an SME, there will be different service providers and Financing Providers. The templates for loan calculation can be expected to be different too based on regulatory requirements and market trends.

It will be key to have a user presented with only the data relevant to their country and their business size.

As the platform will be used by and scaled for different countries, the administrator will need to create the template to be customizable so specific fields can be added as relevant to a country and linked to a country. This may include factors such as:-

- 1) Customised registration forms.
- 2) Adding or removing fields that appear on the template that an institution will fill.
- 3) Addition of the financing providers and business service providers services that would appear on the platform

It is recommended that each template be based on a data input excel sheet with the necessary fields for a country's user (front end registration and inputs by financing service providers) and loan calculation information.

To ensure the template and the process of adding a new country remains dynamic, the database would have additional anonymous fields that would be called when the requirements on the excel sheet are more than the original fields provided on the basic template.

5.5 User Records Management:

If user records are not applied for more than a period set by the content administrator (normally 12 to 18 months since the last visit or change) they will be

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automatically archived for a period set by the administrator, but not less than 5 years, after which they will be deleted.

The system will send a notification email to the financing provider and flag records that have not been updated for nearly a year. The notification could be scheduled to be sent on the 11th month of the record being live and unchanged.

5.6 The Loan Calculator

Our thoughts are that the cost of credit calculators will be bespoke for each country as the inputs that inform the calculations follow the specific country's laws (tax laws and regulator's provisions). As such it will be helpful to review the requirements of each country first and estimate the extent of changes that require to be factored in.

5.6.1 Kenya Loan Calculator

We are able to deliver a cost of credit calculator similar to the one that we did for KBA in 2014 where the user can make a calculation of cost of credit by entering the loan amount that they wish to borrow, the interest rate, the interest rate method that applies for them (Straight line or annual interest rate) and the charges (bank charges and insurance).

Users looking to borrow from microfinances choose Straightline method as it is the interest rate method that applies, while those looking to borrow from conventional Financing Providers choose the reducing balance method.

In this calculator, the third party charges (legal, valuation, excise duty stamp duty) are built in since these are standard charges guided by laws that stipulate the % to be charged based on loan amount. E.g. for Legal fees % charged is guided by the ARO (Advocates Remuneration Order) and valuation fees follow the legal provision on Valuers Fees.

Excise duty and Stamp duty are guided by Kenyan tax laws that provide the % charges based on total bank charges for excise duty and value of property for Stamp duty calculation.

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6 CHANGE LOGS AND REPORTS

The platform requires high level reports and tracking that will be viewed based on the different user access levels.

6.1 Reports and Analytics

It will be possible to generate reports and analytics of the data on the backend based on data collected on the platform on registration as well as searches.

The reports that can be collected The admin will be able to provide analytics based on data entered by users such as

- Total users by user types
- Total no. of enterprises per county / district
- Number of businesses by industry
- Total enterprise owners by country
- Number of Financing Providers per country
- Number of enterprises that have made contact with Financing Providers

6.2 Financial Institutions Reports

The users from the institutions who have access to the platform will be able to view their institutions reports that include

- Number of clicks to contact institution.
- The most clicked facility on their institution.
- Hit review of their products

6.3 DFI's and Policy Makers

The administrator will be able to provide the following reports to the DFIs

- Number of users subscribed on to the platform
- Number of enquiries made to Financing Providers.
- Spread of of enquiries per business category.
- Most enquired about products based on click through to Go to Provider clicks.
- Number of women and youth subscribed and their most recorded needs.

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- Country report: Number of participating institutions (Active and inactive) per country
- Anonymized Report on the number of registered users per Country
- The most viewed institution and most common facility.

6.4 Administrative Reports

The administrator will have full access to all reports and tracking. The reports will include

6.4.1 User Records

This report will be based on the number of users registered, their locations, their activity on the platform for example password reset requests etc.

6.4.2 Institution Facility Tracking

This report will show a summary of the creator of each facility, when it was created, the assigned approver, whether it has been approved or rejected. It will also show institutions with no active data.

6.4.3 Connections of MSMEs to Institutions

This report will give the count of click throughs to each institution's website. One will be able to filter this by either bank, product, if product is categorized as suitable for micro, small or medium enterprises.

These reports will be downloadable as csv, Excel or pdf.

6.4.4 Newsletter Subscriptions

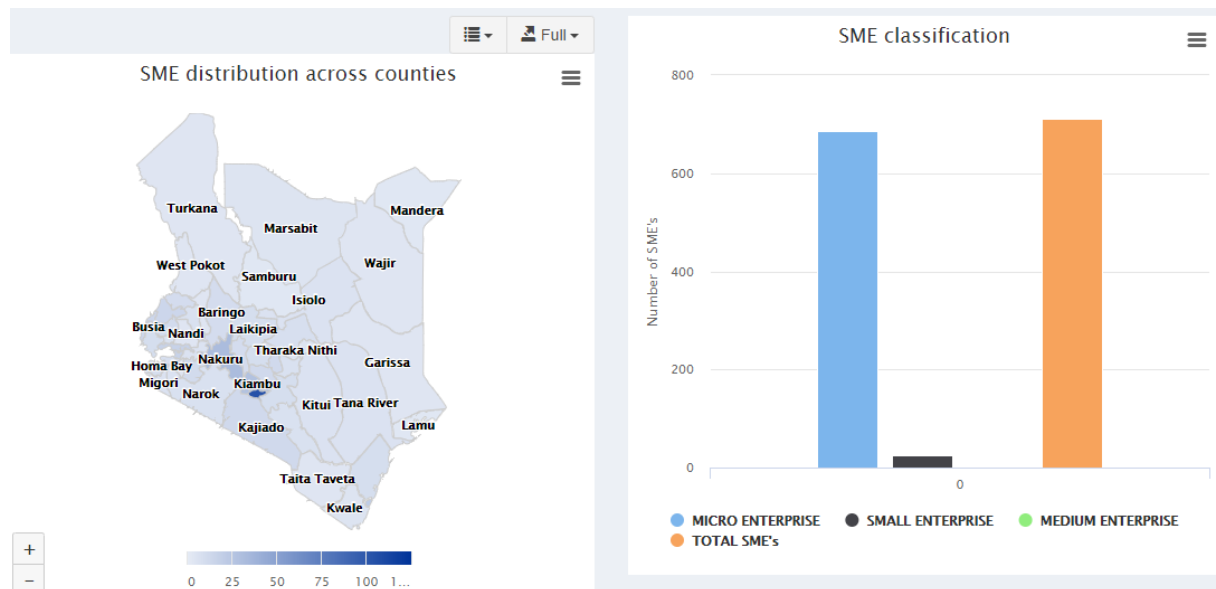
The report will show

- the number of users subscribed to newsletters.
- Click rate on calls to action newsletter emails inviting the member to click and read the newsletter.
- Number of unsubscriptions

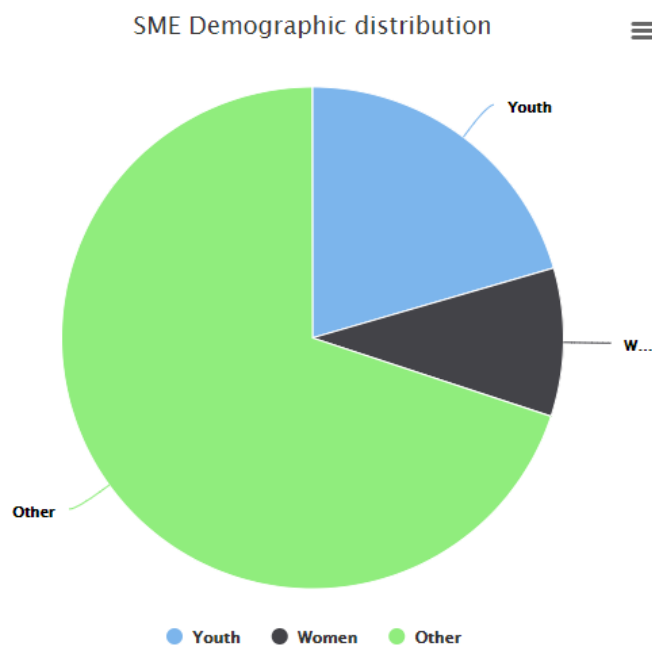
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6.5 Data Representation Using Visuals

Interactive data visuals that will display statistics when one hovers over the map or bar chart.



Visuals Indicating Platform uptake by Gender



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7 AESTHETICS AND USER EXPERIENCE

We propose to design and develop a clean, easy to use interface that encourages user engagement. The design will achieve the following objectives:

- Enable rapid access to content through well-structured menus, search feature and content filters.
- Enable content readability by using different font sizes.
- Maintain branding across all pages.
- Work across the major browser types and versions, operating systems and devices.
- Seamless brand identity and intuitive user flow through the websites.
- The design will aim to provide a visually appealing user interface and create a consistent look throughout all web pages and country websites.

7.1 Proposed Features for a Better UX

We propose to incorporate:

- Icons to highlight key calls to action.
- Incorporate interactive hotspots (buttons, swipe/scroll visual features) to indicate to viewers how to navigate through various elements within a webpage and across the website.
- Downstream, should any new icons or features be introduced, they will be highlighted by use of pop up tooltips, in order to quickly familiarize users on their purpose and function.
- Website tour video

7.2 Site Structure

We propose to provide an optimised technical design with a focus on core information.

We propose to build a website on Laravel to ensure the website is easy to update after launch and to incorporate a role based content management functionality that

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allows for different roles of users to collaborate on updating the website and managing the quality of content before live publishing.

We will employ database optimisation techniques. This will ensure rapid loading of information, improved overall website performance with optimised load on the hosting server.

7.3 Navigation

Clear, simple and intuitive navigation is critical for all websites especially the content rich websites like the such as the Financing MSME Gateway platform. Minimising clicks, page loads and ensuring key information is the focal point are some of the techniques that we propose to utilise in order to optimise user experience on the website.

Sample techniques would be:

7.3.1 Menu Highlights

Clear indication where within the website a user is. Useful if Google results land a user away from the home page. This main menu option will remain highlighted regardless of the sub-menu location that the user is currently browsing.

7.3.2 Breadcrumbs

This is a text representation of the current menu location the user is in.

7.3.3 Human Interaction

The website will be designed to enable users to easily navigate whether using mouse, touch pad or touch screen technology.

7.3.4 Enhanced Search

A full website-wide search functionality will be implemented to enable users to enter free text and find information via the search feature of the website. For catalogued information such as publications and reports, a defined search criteria using drop down menus to select specific criteria will be utilized.

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7.4 Calls to Action

We propose to develop focus areas and “calls to action” to engage users and draw them in to read content and take specific actions while on the website. e.g. save the date (for events), Subscribe to Newsletter, Get in Touch, Get Involved, Save the Date etc.

7.5 Organisation of Content

We will be sure to place content in a manner that maximizes on focal areas of the website to display key content and lead users to take the actions we wish for them to take on the site.

For instance, the banner is the most prominent section of the site, as such, community participation can be encouraged here.

As the websites are quite content heavy, using tabs and scrollable carousels will help keep relevant information accessible and maintain aesthetics at the same time.

7.6 Dynamic Template

The websites will be desktop, mobile & tablet friendly (portrait & landscape) in line with current trends and Google’s latest algorithm update.

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8 DEVELOPMENT

8.1 User Authentication Levels

The platform will include an authentications process with ACL (Access Control Levels). These means roles and permission can be created and assigned to users. The platform will integrate a functionality to add, manage and delete roles. The main roles on the system will be as follows:

Level	Role	Permissions
Administrator	Primarily managing the infrastructure of website content	<ul style="list-style-type: none"> • Monitor site • Manage user roles and permissions • Change site settings • Manage global reports
Country Administrator	Responsible for managing specific country information (news, translating common fields)	<ul style="list-style-type: none"> • Translate common fields to country language • Upload news and resources for country
Financial Institution Information Editor	Responsible for the information and documents uploaded onto the platform for their institution.	<ul style="list-style-type: none"> • Create upload information • Send it for review by Approver
Approver	Approve / reject information sent by the editor.	<ul style="list-style-type: none"> • Review information • Push information live (publish)
Public	Viewing content on the website based on their registration levels as described on section 3.2 and 3.3	<ul style="list-style-type: none"> • Viewing and navigating through site content

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8.2 The Administrator

The global administrator would be created at the initial stage of the platform for creation. The administrator would then define the other user roles based on provided criteria.

8.3 Planning

Identifying the Environment - The latest Laravel version shall be used, which is Laravel 6.0

With each new release, Laravel fixes bugs, add new features, improve performance, and enhance existing features to stay up to date with new industry standards.

Our target shall be to create a website that can cut across desktops, laptops, tablets and mobile phones. The main targeting options are Google Chrome, Mozilla Firefox, Apple's Safari and Microsoft's Internet Explorer for the web-based backend systems and for devices, Smart phones, tablets, laptops and screens

8.4 Development

For the web-based backend and frontend system we shall have two environments, each environment runs a version of the platform on its own container. Separate Development and Live environments allow you to develop and test your site without impacting the live site's availability to the world.

Once we have the final approved designs and project plan, the development team is ready to start programming phase. In this phase, we will create all page templates using the coding standards that we have put in place and documented. Our team will code custom features and functionality based on the project requirements using custom code and plugins. Additionally, throughout the development phase, the development team will perform code reviews on all features to ensure proper sanitization, caching, and security are in place.

The development workflow shall be as follows:

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8.4.1 Database Architecture

The first step will be to create the database structure and to ensure proper relationships between tables are created and established.

8.4.2 Backend Development

Development of the backend system shall then commence to ensure that all the needed API's and functionalities are created. The backend system will be a web-based application and hence will be accessed from any standard operating system if the supported browser is installed. Its main purpose will be to enable the administrator to analyze and view reports, manage users as well as edit dynamic content. It will also allow access on mobile devices since it will be responsive on all devices.

8.4.3 Website Customization

Laravel shall be installed onto the server and the development and design will then start after. The website looks and feel based on the design will be created. This will also include creating of the website pages and menus. All user level access will be integrated and the menus accessible to each role registered. All required API's and functionalities are then developed. The backend system will be a web-based application and hence will be accessed from any standard operating system if the supported browser is installed. It will also allow access on mobile devices since it will be responsive on all devices.

8.5 Tools

- Sublime Text Editor and Visual Text Editor as the Code editors.
- Navicat Pro for database manipulation.
- VPN or SSH to connect to server files.
- Git for version control. Mostly by command line.

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9 SERVER CONFIGURATION

9.1 Server Configuration

Once the hosting server is identified and access is allocated, the next step is to include software that Laravel is dependent on.

9.2 Platform Customization

Laravel shall be installed onto the server and the development and design will then start after. The Platform looks and feel based on the design will be created. This will also include creating of the platform pages and menus. All user level access will be integrated and the menus accessible to each role registered. All required API's and functionalities are then developed.

9.3 Tools

- Sublime Text Editor and Visual Text Editor as the Code editors.
- Navicat Pro for database manipulation.
- VPN or SSH to connect to server files.
- Git for version control. Mostly by command line.

9.4 Software Requirements

The following software requirements will be upheld for development of the site:

9.4.1 Disk Space

The base files for the core software take up about 100 MB [500MB](#) on the web server. You will need more space if you install additional modules or themes, and you'll also need space for media, backups, and other files generated by and uploaded to your site.

9.4.2 Web Server

Apache is the most commonly used web server. The core software will work on Apache 2.x hosted on UNIX/Linux, OS X, or Windows that have the Apache mod

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rewrite module installed and enabled. The Apache Virtual Host configuration must contain the directive Allow Override All to allow the .htaccess file to be used.

9.4.3 Database

MySQL - 5.5.3 (MariaDB 5.5.20,) or higher with an InnoDB-compatible primary storage engine

9.4.4 PHP

PHP version 7.2

9.5 Contractor Terms:

- We will require bi weekly updates on the project. Currently updates to the customer are spontaneous but happen atleast twice a week.
- Share updates on Farwell's GIT once a week for the first month. 2nd month onwards twice.
- Share test cases for features in your submissions.
- Incase you will be using any third party plugins, please declare them in advance for security confirmation as we are contractually required to push progress to the customer's server.