
A Project Report

ON

# Business Model Innovator

BY

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# 1. Abstract

Business Model Innovator is web based application which will guide the user through the various stages of building a business model. Each stage will have various sub-stages and each sub-stage has various templates. Our web based model is automated which eliminates the requirement of pen and paper and provides a final report in the end which consolidates all the stages. A login and a registeration page has been provided where the users can register their details and log in using them. The user can log out any time the user wants too. No two users can have the same username. Each user has his own database where data gets stored. Once the user logs in to the system he is provided with functionalities like

- Navigation – The user can navigate between stages via widgets. These widgets have been provided using carousels.Thus the user can easily navigate between stages and can access whatever they have written very easily.
- Database – Whatever data that the user enters is stored in the form an xml file. It can be accessed or modified anytime.
- Graphs – Graphs have been provided for frequency versus importance where coordinates can be plotted. Once the coordinates have been plotted its values are displayed along withthe problem statement. Similar graph has been created for idea.
- Suggestion links – Once the user enters something in the technology template an option appears which takes te user to a google search page which information relevant to the topic.
- PDF Generator – At the end of stage 5 a pdf with the consolidated stage 5 is generated. Separate pages have been provided for each template in stage 5 with images relevant to the stages.
- Collapse bar – When the collapse bar is clicked upon it consists of information regarding the templates helping the user to understand the templates better.

# 2. Introduction

## 2.1 Introduction to the domain

A business model describes the rationale of how an organization creates, delivers, and captures value in economic, social, cultural or other contexts. The process of business model construction is part of business strategy.

In theory and practice, the term business model is used for a broad range of informal and formal descriptions to represent core aspects of a business, including purpose, target customers, offerings, strategies, infrastructure, organizational structures, trading practices, and operational processes and policies. The literature has provided very diverse interpretations and definitions of a business model. A systematic review and analysis of manager responses to a survey defines business models as the design of organizational structures to enact a commercial opportunity. Further extensions to this design logic emphasize the use of narrative or coherence in business model descriptions as mechanisms by which entrepreneurs create extraordinarily successful growth firms.

Business models are used to describe and classify businesses, especially in an entrepreneurial setting, but they are also used by managers inside companies to explore possibilities for future development. Well-known business models can operate as "recipes" for creative managers. Business models are also referred to in some instances within the context of accounting for purposes of public reporting.

The years, business models have become much more sophisticated. The bait and hook business model (also referred to as the "razor and blades business model" or the "tied products business model") was introduced in the early 20th century. This involves offering a basic product at a very low cost, often at a loss (the "bait"), then charging compensatory recurring amounts for refills or associated products or services (the "hook"). Examples include: razor (bait) and blades (hook); cell phones (bait) and air time (hook); computer printers (bait) and ink cartridge refills (hook); and cameras (bait) and prints (hook). A variant of this model is Adobe, a software developer that gives away its document reader free of charge but charges several hundred dollars for its document writer.

In the 1950s, new business models came from McDonald’s Restaurants and Toyota. In the 1960s, the innovators were Wal-Mart and Hypermarkets. The 1970s saw new business models from FedEx and Toys R Us; the 1980s from Blockbuster, Home Depot, Intel, and Dell

Computer; the 1990s from Southwest Airlines, Netflix, eBay, Amazon.com, and Starbucks.

Today, the type of business models might depend on how technology is used. For example, entrepreneurs on the internet have also created entirely new models that depend entirely on existing or emergent technology. Using technology, businesses can reach a large number of customers with minimal costs.

In the early history of business models it was very typical to define business model types such as bricks-and-mortar or e-broker. However, these types usually describe only one aspect of the business (most often revenue model). Therefore, more recent literature on business models concentrates on describing business model as a whole instead of one most visible aspects.

The following examples provide an overview for various business model types that have been in discussion since the invention of term business model:

Bricks and clicks business model Business model by which a company integrates both offline (bricks) and online (clicks) presences. One example of the bricks-and-clicks model is when a chain of stores allows the user to order products online, but lets them pick up their order at a local store.

Collective business models Business system, organization or association typically composed of relatively large numbers of businesses, tradespersons or professionals in the same or related fields of endeavor, which pools resources, shares information or provides other benefits for their members. For example, a science park or high-tech campus provides shared resources (e.g. cleanrooms and other lab facilities) to the firms located on its premises, and in addition seeks to create an innovation community among these firms and their employees.[37]

Cutting out the middleman model The removal of intermediaries in a supply chain: "cutting out the middleman". Instead of going through traditional distribution channels, which had some type of intermediate (such as a distributor, wholesaler, broker, or agent), companies may now deal with every customer directly, for example via the Internet.

Direct sales model Direct selling is marketing and selling products to consumers directly, away from a fixed retail location. Sales are typically made through party plan, one-to-one demonstrations, and other personal contact arrangements. A text book definition is: "The direct personal presentation, demonstration, and sale of products and services to consumers, usually in their homes or at their jobs."[38] Distribution business models, various

Value-added reseller model Value Added Reseller is a model where a business makes something which is resold by other businesses but with modifications which add value to the original product or service. These modifications or additions are mostly industry specific in nature and are essential for the distribution. Businesses going for a VAR model have to develop a VAR network. It is one of the latest collaborative business models which can help in faster development cycles and is adopted by many Technology companies especially software.

Fee in, free out Business model which works by charging the first client a fee for a service, while offering that service free of charge to subsequent clients.

Franchise Franchising is the practice of using another firm's successful business model. For the franchisor, the franchise is an alternative to building 'chain stores' to distribute goods

and avoid investment and liability over a chain. The franchisor's success is the success of the franchisees. The franchisee is said to have a greater incentive than a direct employee because he or she has a direct stake in the business.

Freemium business model Business model that works by offering basic Web services, or a basic downloadable digital product, for free, while charging a premium for advanced or special features

The essence of a business model is that it defines the manner by which a business enterprise delivers value to the customers, entices customers to pay for value, and converts those payments to profit.Thus it is essential to have a proper business model as it is important from the perspective of an organization or a particular person to ensure that the business model garners them profit.

We have emulated the intel charts to provide the user with a proper experience of all the components involved in creating the business model.These charts have thoroughly covered all the important points and are very easy to understand. For a beginner who might have limited knowledge of business the Business Model Innovator will guide the user in the proper direction.

## 2.2 Challenges and Opportunities

There are various design that are followed to prepare a business model all of which are not automated online. The present situation in building a business model is scattered and requires a pen and paper. Thus there is a need to integrate all the data so that everything is at one place.It is very cumbersome to track data when it is scattered. Thus their is a need to have organized data which can be accessed whenever required at the helm of the user.Reaching this vital goal demands that associations embark on a comprehensive, dynamic, and ongoing process of reinvention, beginning with an intentional and imaginative effort to design, develop, and implement new business models.

Using the business model innovator managers inside companies can study the business model to explore possibilities for further development.The business model innovator will help the business analyst by saving time and he will have all his resources at the tip of his fingers. It will also help a layman in trying to figure as to how to go about building a business model. The tool we are building will guide users through several stages of building a model and will give examples from existing test cases.

Using these examples the user will get a better idea of filling data in every stage which is pertinent to the business model. The essence of an organization is that its buisness model is poriftable and is widely accepted. Different models can be applied to different product segments based on their requirements. This makes the job of people is easier, as everything is done on the system and human dependency is minimized. Different templates can be provided for different models depending on requirements. These templates can be used to create different models. Also the users can log in after registering with their details. Once logged in, whatever data the

user inputs will get saved in their respective database.

## 2.3 Identifying Problems

A person has an idea in his mind and wants to express this idea in the form of a business model. The main problem is that he does not know how to give a concrete structure to the model. The person might use a pen and paper to put down his idea and its various facets but this becomes very cumbersome. There are various aspects of creating a business model and the particular person might not be well versed with them.

In companies business models play a major role in making decisions and also influencing decisions. Different companies have different business models for various products and a good business model can do wonders for the vendors of a product. There are various types of business models used like bait and hook,bricks and clicks,freemium etc. which use different strategic approaches. Different business ideas require different approaches and the user must be made aware as to which one to take. If the business model is improper and if the correct measures have not been taken into account it could be detremental. Not everybody is well versed with the knowledge of business but if taken through a systematic approach like in the case of Business Model Innovator it will make life easier for the user.

Thus the approach used for making a good business model is essential as it is instrumental in determining the profit that an organization can make from its product. This makes it important for an organization to have a tool which can automate the process of generating a business model saving time and discrepancy in data.

## 2.4 Problems to which we are providing solution

The tool which we are providing will help a person with a business idea structure it. It will guide the person through the various steps involved in forming a business model. People using this tool will come across various stages involved in forming a business model. All these stages have substages which will take the users through the various stages of forming a business model and will give them a better picture of the various aspects involved in forming a model.

This tool will eliminate the problem of scattered data by integrating all the stages and these stages can be viewed anytime by the user and hence automating the current situation. Each substage has templates containing important questions encountered during forming a business model. Data entered by the user will be saved and when all the stages are completed then a pdf will be generated with the entire business model. Business Model Innovator will also cater to people with limited business knowlege who have a business idea and want to create a model. A stage has also been provided with videos of different business models giving the user an idea about which direction they are heading. Confusions as to what to write will be cleared as examples will be provided before each stage exlaining what to write in the templates.

When all the data is at one place it will give the users a clearer picture of the business model. This tool can also be used by organizations to create business models thereby saving time and providing the possibility of creating a better model. THe business model also provides facility to the user to log in and make changes whenever they want to. Two users can never have the same id. Password encryption has also been provided.

# 3. Problem Definition

Building a tool that will ***automate*** the process of creating a business model, and ***guide the user*** in devloping an idea in their mind thus ***eliminating*** the use of pen and paper.

# 4. Literature Survey

Business Process Modeling is the new standard for modeling business processes and web service processes, as put forth by the Business Process Management Initiative. BPM is concerned with modelling the stages and managing change to improve business processes. The purpose of our tool, Business Model Innovator, is to generate a business model. The Business Model Innovator guides the user through a step by step procedure where the various aspects of generating a business model is explained. Along with the various stages which have been provided to guide the users, examples from existing business models have also been provided which would give them a better understanding of how to go through every stage. Business Model Innovator is automated and all the stages present in it have been cross-integrated making it easier to traverse between stages.

We went through a lot of online research before starting our software design, mostly to check the tools which were previosuly present, study the business models (both entrepreneurial and acedmeic) and gain a thorough understanding of the Intel Business Model.

We found out that a business model consists of multiple diagrams. These diagrams are designed to be easy to use and understand, but they also provide the ability to model complex business processes. We decided that we have to specifically design our tool with web services in mind.

We learned that Business Process Modelling is only one of three specifications – the other two being Business Process Modeling Language (BPML) and a Business Process Query Language (BPQL). And it is the easiest one which could be understood and used easily by a layman. It was the best form which could be used for user interaction and could be enhanced for better by developing into a software. Hence, we decided to go ahead with the BPM software tool using the Intel Business Model. At the core of business process modeling are the processes themselves. There are three types of processes – the process, the sub-process, and the task. Each is graphically depicted in our software and the use of graphs and videos reflects the hierarchical relationships between them.

Next step was to go through the various "Business modelling" websites which were already present and to check the functionalities provided by them and design our tool to integrate the best of their features along with new features.The tools which are present online do not provide the user with the details needed to understand the complete business model and most of them need a purchase to be able to use their full functionality. All these things tend to make the user unable to realize the importance of modelling their business ideas and hence the user fails to

use these tools to their full potential. Modeling is essential to understanding and communicating business processes across the enterprise

We also went through techpedia.in to undertand their working and tried to integrate the website in our tool, but it remains in the conceptual stage. Along with this, we went through www.sba.gov which also genertes a business model but it doesn't provide a user-friendly interface and doesn't take you through the sample examples. Also, they have used a different model which doesn't consist of graphs which is a very important feature of this tool.

# 5. Problems Requirements Definition

## 5.1 Project Perspective

This tool will comprise of a software portal which will emulate the different stages in building a successful business model. The present situation in building a business model is scattered and requires pen and paper (example intel charts).

There are various designs that are followed to prepare a business model all of which are not automated online. The main objective of this tool is to integrate the different steps involved in making a business model. Suppose a layman has a business idea and wants it to have a concrete structure he can use the Business Model Innovator tool which will guide him/her through all the steps involved in forming a business model. It also consists of examples from actual business models which will help the user in gaining a better idea.

## 5.2 Project Functions

1. This product will help people with business ideas in their mind gain an understanding of the different aspects of forming a business model.
2. The product consists of stages which have substages which cover all the important details which are required in forming a model.
3. Before the starting of a particular stage an example from an existing business model will be given which will help the user in understanding the problem better.
4. Data entered by the user will be saved in each stage and can be modified later.
5. Graphs have been provided for understanding frequency versus importance for a problem and uniqueness versus value for ideas.
6. Widgets have been provided to traverse between stages.
7. Once all the stages have been completed a pdf is generated comprising of the consolidated business model.Each user has been provided with facility to log in with their own account so that no one can manipulate their data.

## 5.3 User Classes and Characteristics

- The main user of the product is the Entrepreneur (young and old alike). Its frequency of use could be on a daily basis.
- Since it is something new, the user will initially need to follow the tooltips we are aiming to provide with each step in the software.
- Another User class that can use this product is one with some business or project idea,(be it college, social or any other project). Its frequency of use would be in demand.
- The next set of users can be in workshops like "Youth Entrepreneursip workshop"conducted by Intel.

## 5.4 Operating Environment

1. Business Model Innovator is a web based application which uses Javascript, CSS, Bootstrap, PHP and AJAX.
2. Thus the operating environment consists of a browser and a client server model.
3. Hardware required is computer with a decent web browser.

## 5.5 Assumptions and dependencies

1. The language used will be english. The end user must be well versed in english in order to use Business Model Innovator.
2. The user must have a basic knowledge of computer which includes using a keyboard, mouse etc.
3. We are assuming that the user already has a business idea in his mind and we are only helping them in enhancing that idea.
4. Clients must have systems that adhere to minimum requirements like Good internet connection, decent web browser and 2GB of RAM.

# 6. Gantt Chart

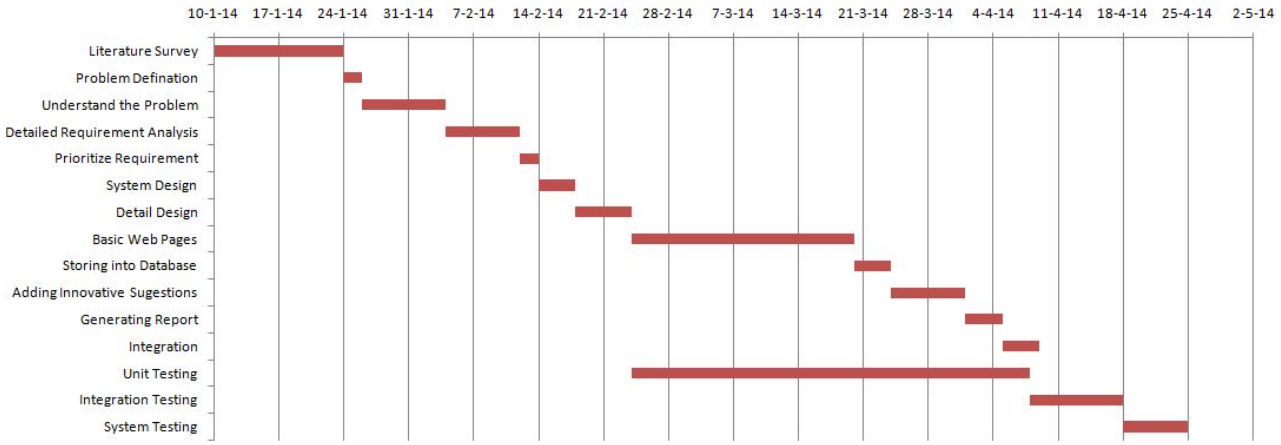


**Figure 6.1:** Gandtt Chart

# 7. System Requirements Specification

## 7.1 Document Purpose

This document provides the software requirement specification of our product "Business Model Innovator" with the complete product scope and the intended audience. It also provides the overall description of the product which includes Product Perspective, Functionality, Users and Characteristics, Operating Environment, Design and Implementation Constraints, User Documentation, Assumptions and Dependencies. The document lists out all functional and non-functional requirements of the client and developers.

## 7.2 Product Scope

### 7.2.1 Services Provided

- Develop Idea
- Enhance user group
- Real Time Suggestion
- Save all Data
- View and Plot Graps
- Present Idea Summary
- Generate PDF

### 7.2.2 Benefits

- An easy to use and intuitive platform for all the services mentioned
- A secure service with details collected from the user and then used to give suggestions to the logged in user .
- Generate a tested business model.

- Helps push the user in the right directioon

## 7.3 Interface Requirements

### 7.3.1 User Interface

- HTML – Used to create text box, buttons etc.
- PDF – The final report is generated in the form of a PDF file.

### 7.3.2 Software Interface

- Browser – The default brower used is Google Chrome.
- Local Server – The default local server used is Wamp and Xampp.

## 7.4 Functional Requirements

1. User Authentication for login and registeration for new users

   A new user should be able to registeron the website and a check should be made in the database to ensure if the email id is available. Once he is registered, he can login with the same email id and continue to browse the web tool.

2. Writing down the thought process of the user in various stages of the process while generating a business model

   At every stage, various components like textbox, drop-down menu, buttons etc are provided to save the thought process of the user while he/she is going through the process of generating the business model.

3. Graphs for analysing the problems and ideas based on various parameters

   The problems entered by the user needs to be rated based on the frequency of occurances and its importance in the real world. Such rating, can be done with the help of the graphs which are provided. Similarly, ideas are rated based on their uniqueness and the value.

4. Providing a clear picture of commonly used business models

   Video and description is provided for three commonly used business models i.e Bait and Hook, Freemium and Connection Oriented. After going through the video, one will have a better picture of the business model and will be able to co-relate his model with the already existing model.

5. Saving the final report in the form of a PDF file

   On reaching the final stage, the user will be able to generate the business model in the form of a PDF file and will be able to save it.

## 7.5 Non-Functional Requirements

1. Availability -The ratio of the total time a functinal unit is capable of being used relative to a specified time period.Our availabilty targets .98 (due to server not being accessible during maintainence.)

2. Accessible - The tool should be accessible to every user.User should have a decent web browser, and up do date hardware configurations.

3. Secured and Restoreable- Each user should be provided with a password and an username. He/she can login using that.

4. Documented - To provide a set of documents on paper or online.eg. user guides, white papers, on-line help, quick-reference guides .

5. Modifiable and Extensible- Users should be provided with the feature of modifying their data at any point and at any time.

6. Response Time - Time taken to respnd to a given input.The time taken to save data in the database and fetch it quickly as needed.

7. Reliable - The tool should prvide the desired output which is the business model in this case.

8. Testable - The tool should be open to testing. All the test cases should be covered

9. Usable - It is the ease of use and learnability of the tool.A usability study may be conducted as a primary job function.It studies the elegance and clarity with which the interaction with the web site (web usability) is designed.

# 8. System Design

## 8.1 Introduction

This software design document intends to translate the software requirements into a representation that captures software design, its components, interfaces and data necessary for capturing the design and architecture of BMI. This will enable easy and maintainable implementation.

### 8.1.1 Purpose

The purpose of this software design document is to provide a detailed high level design and then working down towards to a low-level description of the software. It provides an insight into the structure and design of the components. Topics covered in this document include the following:

- Block Diagram
- Architecture Description
- Data flow Diagram
- Use case Diagram
- Scenario description

This document is meant to equip the reader with a solid understanding of the architecture of Business Model Innovator software. The document also serves as a basis for the implementation team and the testing and SQA team.

### 8.1.2 Scope

The scope of this document is to provide a high level abstraction decomposed into low level components. It describes the architectural context of the project along with the flow of the data in the application and their interactions with the user and the back end database. It describes the collaboration needed for the components to function correctly.

## 8.2 Block Diagram

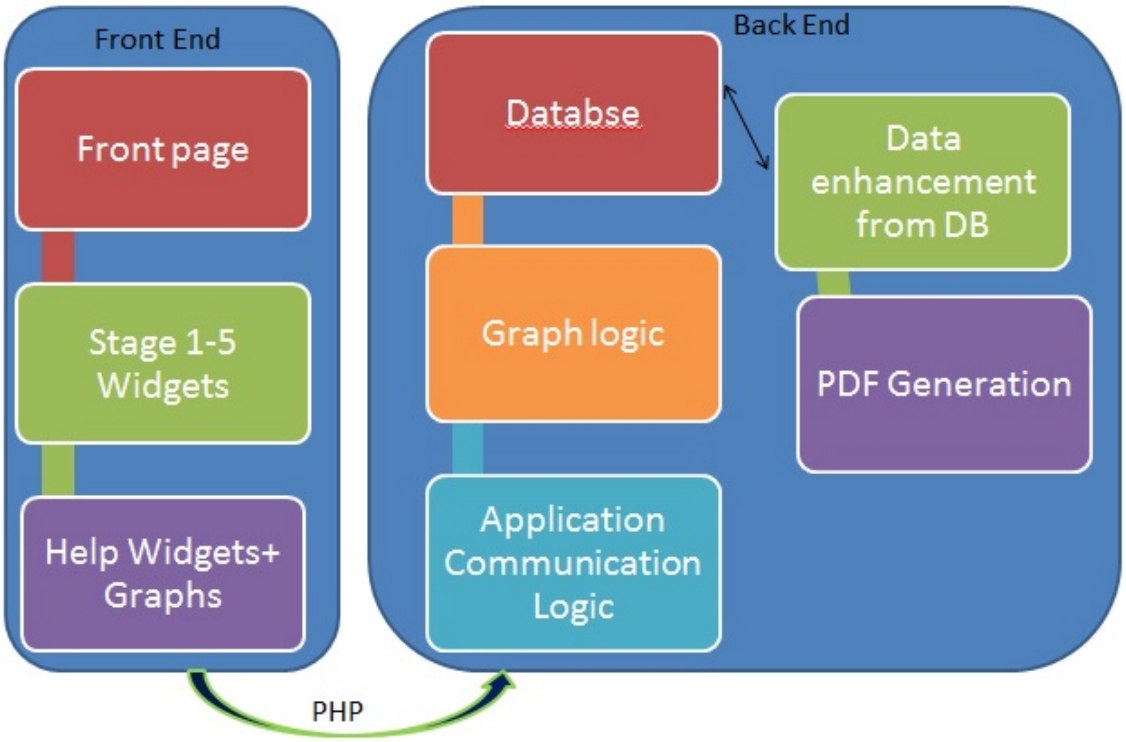


**Figure 8.1:** The Architecture Diagram

The front end consists of an autentication page which when authenticated the user is allowed to enter the home page. Each stage will have various sub-stages and each sub-stage has various templates. Each template is connected through widgets making traversal easier.

The backend is made up of mainly PHP which does the task of interacting with the database. A PDF file is generated by the PHP script at the end of final stage.

## 8.3 Architecture

We have tried to keep the design of the application simple.

1. User Interface – The User only sees the front-end GUI of the application which is mostly done in HTML5 .We have designed each stage of the Intel Business Model as widget containing tool tips, help info-graphics and related videos. The user can easily navigate from one widget to next and can even traverse between the different stages with the click of a mouse button. The main focus while designing this application was the ease of use for the users. We want the users to be as comfortable as possible and focus their attention to only the key points for their idea.

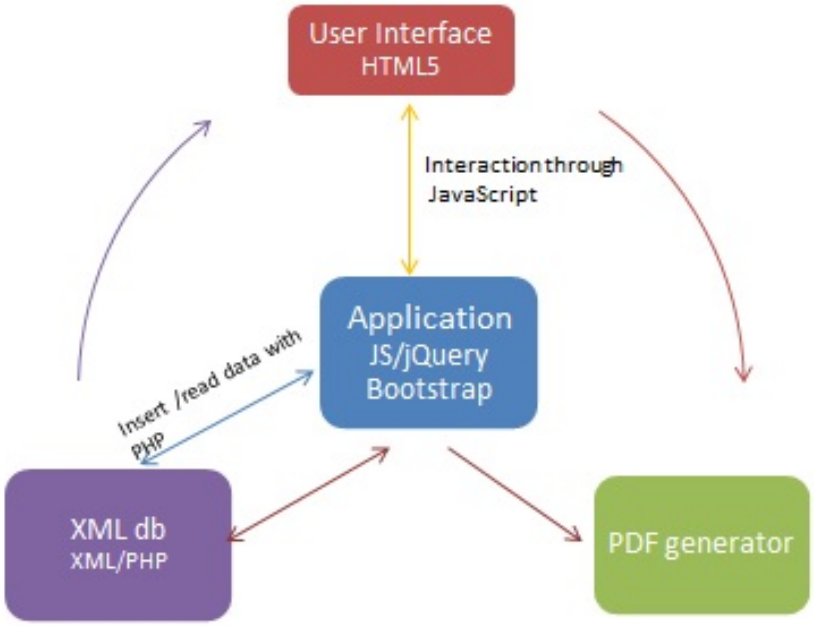


**Figure 8.2:** The Architecture Diagram

2. Application – The GUI is controlled by the back end application which is an amalgam of PHP, javascript, bootStrap and jquery. Javascript and bootstrap are the supporting pillars for the whole app whereas the interwidget communication and data storage is done using PHP and jQuery.

3. XML database – The data storage is done in XML formate as we found it to be the simplest (for OUR application) and the fastest. The other db formats were rejected on the basis of the need of fast performance and less data being stored.

4. PDF Generator – FPDF package is used to generate the final result in the form of a pdf file.

### 8.3.1 Flow of data

The user passes the data from the GUI to the main application which stores this data in the XML database. If previously saved data is needed, this data is fetched from the database to the back end of the application and feeded into the GUI. In the end the needed data is sent to the PDF presenter from the XML database through the controller. The suggestions are also made in the similar manner. The text entered by the user is fetched to find keywords which are searched in google by the PHP script and the result is shown in the GUI.

## 8.4 Use Case Diagram

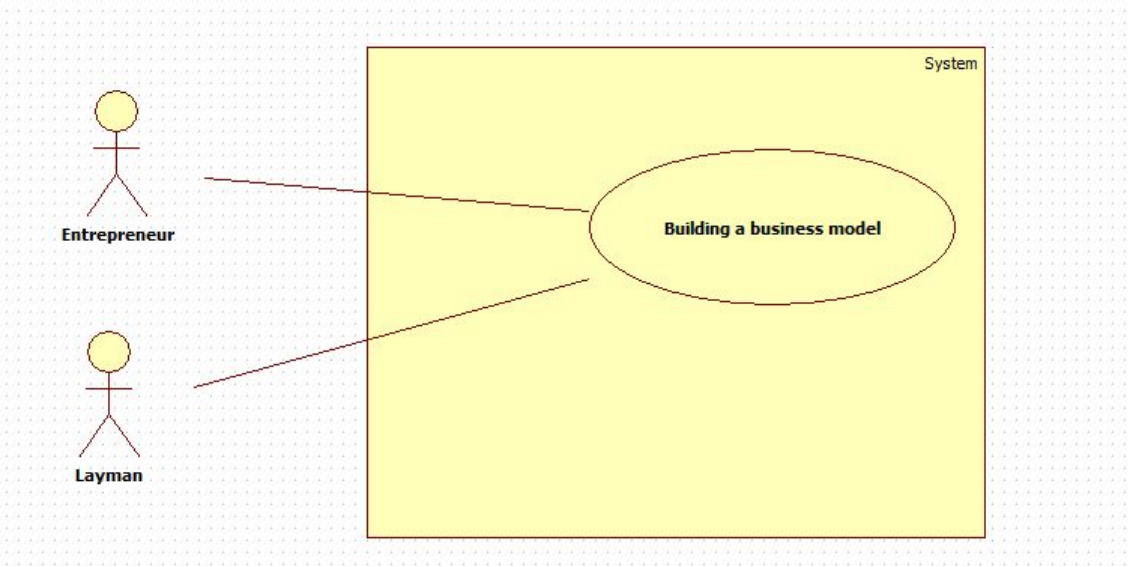


**Figure 8.3:** Use Case Diagram

The actors in this tool are Entrepreneur and layman. Layman includes students and people who don't have indepth knowledge about the business world. The use case for the actors is building a business model. Since this is the objective of the tool, this itself becomes the use case. The Entrepreneur is the sole actor as he is the one who controls the entire system. All the users are at the same level as there is no priority.

## 8.5 Scenarios Description

1. When a new actor uses the tool for the first time, he will be directed to the registeration page and he can register himself by giving the relevent details. Once he is registered, he will be directed to the home page. When the actor clicks on the logout button, he will be redirected to the login page and his session is destroyed.


**Figure 8.4:** Scenario 1

2. When an already registered user (returning user) uses the tool, he will be authenticated with the help of username and password and with successful details, he will be directed to

the home page. If the username and password are not matched, they are redirected to the login page. When the actor clicks on the logout button, he will be redirected to the login page and his session is destroyed.

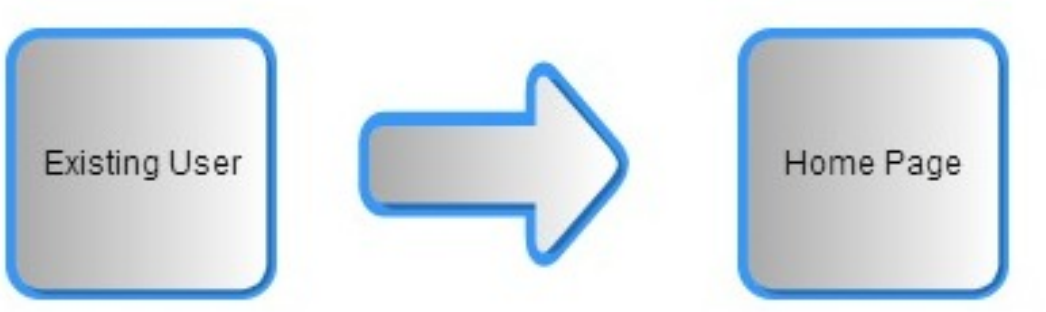


**Figure 8.5:** Scenario 2

# 9. Detailed Design

## 9.1 Modules from Architecture

The Business Model Innovator consists of various stages designed to guide an user towards forming a buisness model. Each stage consists of a substage which in turn consists of templates explaining the data to be entered in each substage.

Each substage consists of templates in a systematic order which explain the step by step procedure of forming a business model.Suppose one stage focusses on the problem statement, the substages will take into consideration the factors like the type of users,revenue,cost etc.. Thus the entire architecture of the Business Model Innovator consists of stages divided into substages. Each stages in connected from one another via widgets which help in traversing between stages.

## 9.2 Module Interface

The Business Model Innovator consists of 5 stages of creating a business model and each stage is connected through widgets which help in traversing between stages. Once the user has writen something in one stage he/she can always return and access their data. Navigation between stages has been made easier using the navigation bar. Graphs have been provided to give a better picture of problem versus importance and uniqueness versus value. Finally a pdf generator has been provided which will compile the data present in the final stage thus generating the business model.

## 9.3 Database Design

The database consists of data stored in the form of an xml file when the user enters data in the substages.

- Whatever data entered by the user gets saved in the xml file. It can be accessed and modified whenever required. Thus a record of whatever the user has written is maintained.
- This data is used later on to generate a consolidated pdf consisting of data entered by the user at particular stage.

- Values of coordinates used in graphs are also stored in an text file. These values can be retrieved later with the help of php. This makes storing data comparatively easy.
- If their is a tag in the xml file saying 213, It means stage 2, template 1, section 3.

# 10. Implementation

## 10.1 Implementation choices

1. Using Play

   Play is an open source web application framework, written in Scala and Java, which follows the MVC architectural pattern.

2. Using Node.js and express.js

   Node.js is a software platform for server-side and networking applications. It is written in pure JavaScript, and can be run within the Node.js environment. Express.js is a light-weight web application framework on top of Node.js to help organize the web application into MVC architecture on the server side.

3. Using HTML 5

   HTML5 is a markup language used for structuring and presenting content for the World Wide Web and a core technology of the Internet.This 5th version of HTML has many new features like the canvas, navigation, header, footer, video etc.

## 10.2 Reasons for choosing a particular implementation

To build this Business Model Innovator tool, we have used a combination of HTML 5, javascript, bootstrap 3, PHP and flot.

- Many features of HTML like text-box, video, drop-down menus, buttons etc has been used for various components.
- Javascript has been used to process the data entered by the user in text-box, buttons, etc. Javascript is also used to make AJAX calls to store the data entered by the user into the database and fetch the data stored in the database when the user re-iterates through stage again.

- Bootstrap 3 has been used to beautify the GUI. Many features of bootstrap like the navigation bar, carousal, collapse bar, has been used to provide a better user interaction.
- PHP is used to implement the server side features. The connection to the database is done for every change in the text box and the changes are stored in xml file as a database.
- Flot is used to implement graphs. The graphs provide mechanism to plot the points for problems and ideas and the points are analysed and certain conclusions are made.

## 10.3 Data structures used

Since Business Model Innovator is a web application, there is no particular data structure that has been used.

## 10.4 Communication mechanisms used and their structure

1. HTML 5
    - Text-Box – Used to provide place for the user to enter his thoughts inorder to capture his direction of thinking while coming up with the business model.
    - Video – To show video for the various type of business model.
    - Drop-Down Menu – Used to select a user from the given set of users.
    - Button – Used to navigate between pages.
2. Bootstrap 3
    - Navigation Bar – Used to implement the navigation bar.
    - Carousal – Used to implement the widgets for each component.
    - Collapse Bar – Used to give a brief desciption of what has to be done in that particular stage along with example.
3. Javascript
    - Provides the core module to interact between different components.
    - AJAX calls are implemented in javascript making the tool faster.
4. PHP
    - The text entered by the user is fetched with the help of GET request, the database (i.e the xml file) is loaded and corresponding node is edited and saved back into the database.

- Whenever the page is loaded, the previously written text is fetched from the xml file and sent to the client in order to fill the text boxes.
- To generate the final output in the form of pdf, fpdf (available php package) is used. The final input from stage 5 is fetched and sent to the php file which genrates a pdf file.
- PHP has been used to generate the login page. Each user has his oen database where everything entered by him gets stored.

5. Flot

- A javascipt framework used to implement the graphs.
- Once the points are plotted, on hovering on it, the co-ordinates of both the axis can be seen.

## 10.5 Psuedocode

```
The login page (User authentication)


//Connect to database
//Select database
//Fetch password based on username
$fetch = mysql_query("SELECT ‘password‘ FROM ‘login‘ WHERE username=’$uid’");
//If password matches
{

//Start new session
session_start();
$_SESSION[’sid’] = session_id();
//Store the first name
//Redirect to the home page
header("location:myindex.php");

}
else
{

//Redirect the login page
header("location:index.html");
```

```
}
```

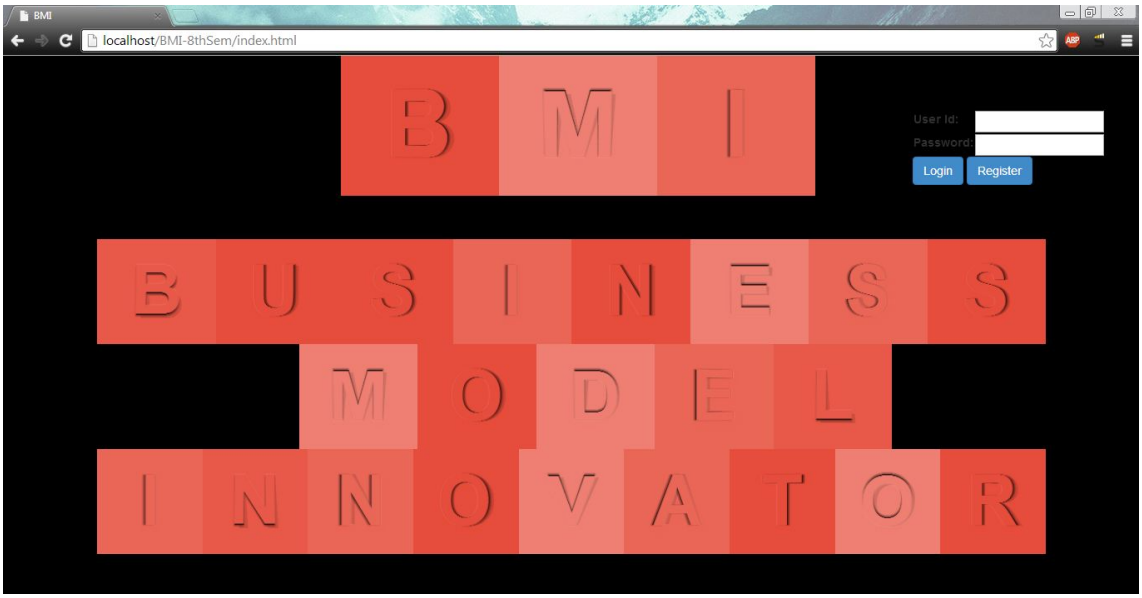


**Figure 10.1:** The Login page

```
New Register page (New User Registeration)

//Connect to database
//Select database
//Fetch password based on username
$fetch = mysql_query("INSERT INTO ‘login‘ (username, fname, lname, password)VALUES
//If password matches
{

//Start new session
session_start();
$_SESSION[’sid’] = session_id();
//Store the first name
//Create the database with first name as the file name
$newdb->save(’database/’.$fname.’-db.xml’);
//Redirect to the home page
header("location:myindex.php");

}
else
{
```

```
//Show alert and render the same page

}
```

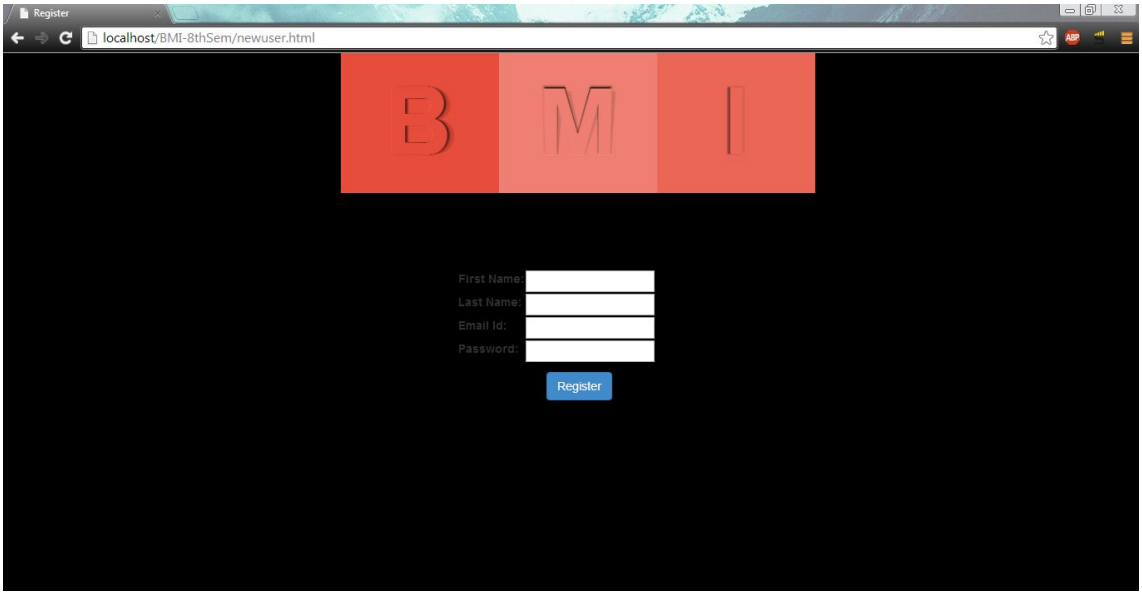


**Figure 10.2:** New User Registeration Page

Navigation Bar

```
//Create a list to implement a navigation bar
<ul class="nav navbar-nav">
//Write the list elements.
<li><a href="myindex.php">Home</a></li>

//Prepare a drop down list to add the sub-links.
<li class="dropdown">
<a href="#" class="dropdown-toggle" data-toggle="dropdown">Stage 2 <b class="caret'
<ul class="dropdown-menu">
<li><a href="stagetwopointone.html">Template 1 - Identify</a></li>
.
.
.
</ul>
</li>

//Add further drop down bars if required
```

```
//Close the navigation bar
</ul>



Wizards

//Define a wizard
<div id="myCarousel" class="carousel slide">
<ol class="carousel-indicators">
//Describe the number of wizards and state the active wizard
<li data-target="#myCarousel" data-slide-to="0" class="active"></li>
.
.
.
</ol>

//Define each wizard by providing its background image and components to be writte
<div class="carousel-inner">
//Add image background for the carousal
<div class="container">
<div class="carousel-caption">

//Add Contents that needs to be displayed.
//Add different components like text box, buttons, drop down menu or simply plain t

</div>
</div>
.
.
.
</div>

//Add button to move to left

//Add button to move to right
</div>
```

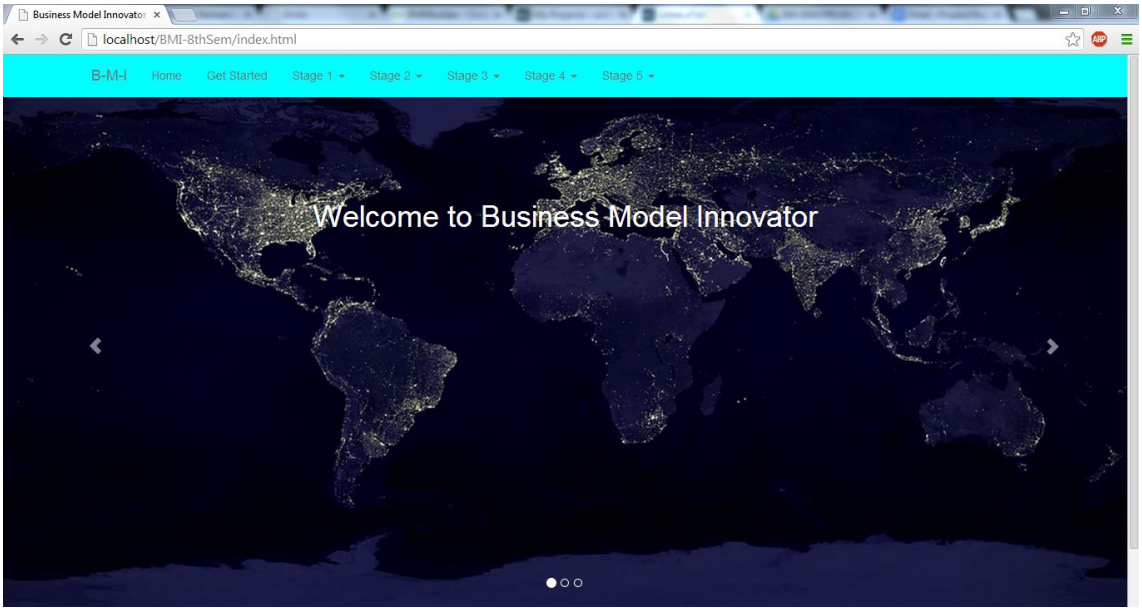


**Figure 10.3:** The home page

```
Collapse Bar

//Define the collapse bar
<div class="panel-group" id="accordion">

//Define the tab and its reference
<h4 class="panel-title">
<a data-toggle="collapse" data-parent="#accordion" href="#collapseTwo">Insights (Re
</h4>

<div id="collapseTwo" class="panel-collapse collapse in">
<div class="panel-body">
//Write the contents and description for the collpase bar here.
</div>
</div>

//Add more tabs if needed here.

</div>
```

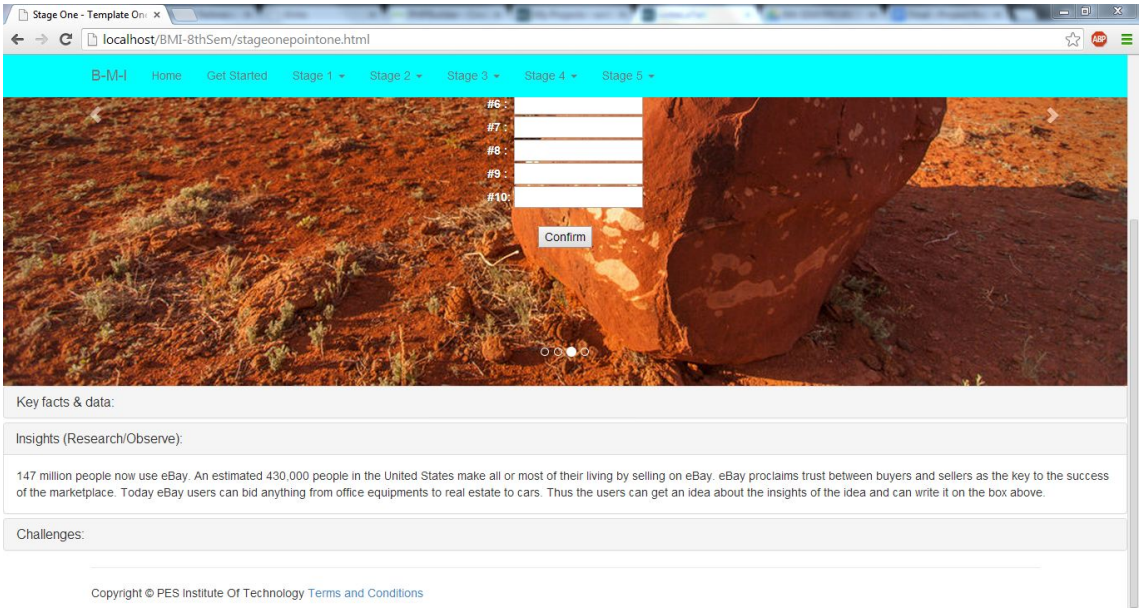


**Figure 10.4:** Collapse Bar

Saving into the database

```
//Load the database
$doc->load('database/'.$fname.'-db.xml');
//Find the node
$mynode = $doc->getElementsByTagName('_'.$myid);
if($mynode->length > 0) //if the node exist
{

//edit the node value and save the file
$mn->nodeValue = $val;
$doc->save('database/'.$fname.'-db.xml');

}
else //if the node doesnot exist
{

//Create the Node and store it
$b = $doc->createElement('_'.$myid);
$b = $root->appendChild($b);
$doc->save('database/'.$fname.'-db.xml');

}
```

Fetch from the database

```
//Load the database
$doc->load('database/'.$fname.'-db.xml');
//Find the node
$mynode = $doc->getElementsByTagName('_'.$myid);
if($mynode->length > 0) //if the node exist
{

//return the node value
echo $mynode->nodeValue;

}
```

Sample Database (i.e xml file)

```
<?xml version="1.0" encoding="UTF-8"?>
<bmi>
.
.
.
<_2111>Small Scale Farmers</_2111>
<_2112>Middle Men</_2112>
<_2113>Transporters</_2113>
.
.
.
</bmi>
```

Generating the pdf file

```
//Include the required package
require 'fpdf17/fpdf.php';
//Create new PDF file
```

```
$pdf = new FPDF('P', 'pt', 'A4');
//Add page into the file
$pdf->AddPage();
//Write contents into the file
$pdf->Cell(0,10,'My Business Model', 0, 2, 'C');
$pdf->MultiCell(0, 20, "Key Partners: ".$kp, 0, 'L');
.
.
.
//display the pdf file
$pdf->Output();
```

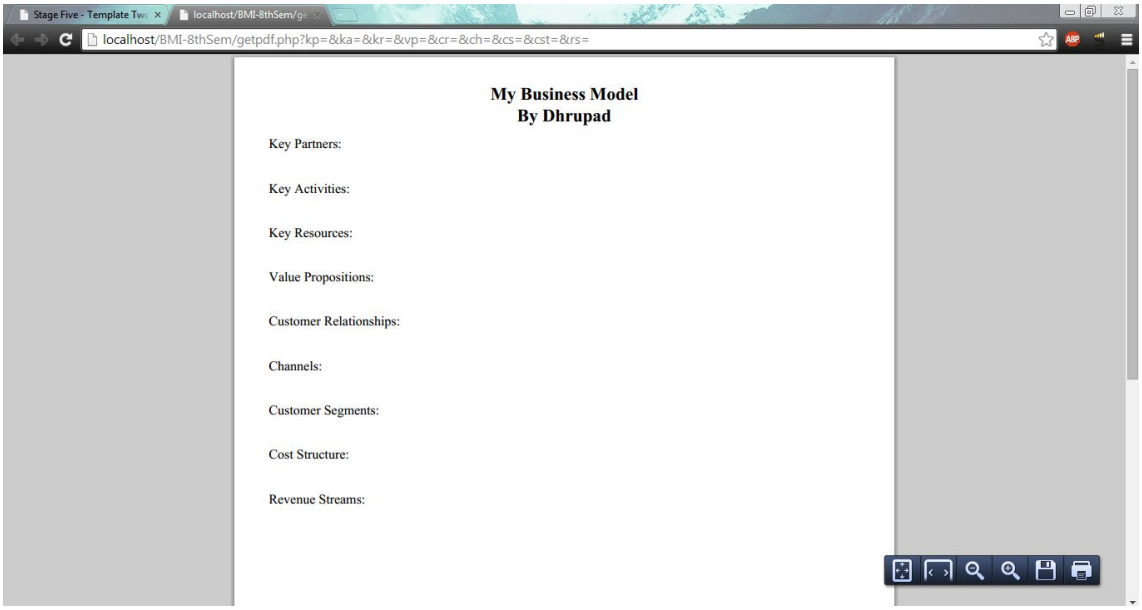


**Figure 10.5:** PDF Generator

```
Graph implementation

----------------------------Javascript part
//On load of the body,
{
Fetch the already existing points from the database and plot them
Register an event for onclick event on the placeolder
}

//Onclick on the placeholder
{
```

```
Get the co-ordinates of the click event,
event.pageX - parentOffset.left
event.pageY - parentOffset.top
save the points into the graph database
plot the points on the graph
}


----------------------------------HTML part
//create a text box and submit button
<input id = "ide" type="text">
//create a placeholder to plot the graph
<div id="placeholder" class="demo-placeholder"></div>
```


**Figure 10.6:** Graphs

```
Smart Graph

//A function for distance formula
function lineDistance(x1, y1)
{
return Math.sqrt((x1 * x1) + (y1 * y1) );
}
```

```
//As soon as the page is loaded,
Distance from origin is calculated and top two points are found.
d = lineDistance(retval[2], retval[3]);
if(d > d1)
{
store d2 and d1
}
else if(d > d2)
{
store d2
}
//They are added in the drop down menu and given a suggestion to newnode = document
var newopt = document.createElement('option');
newopt.innerHTML = s1;
if(newopt.innerHTML != '')
{
newnode.appendChild(newopt);
}
```

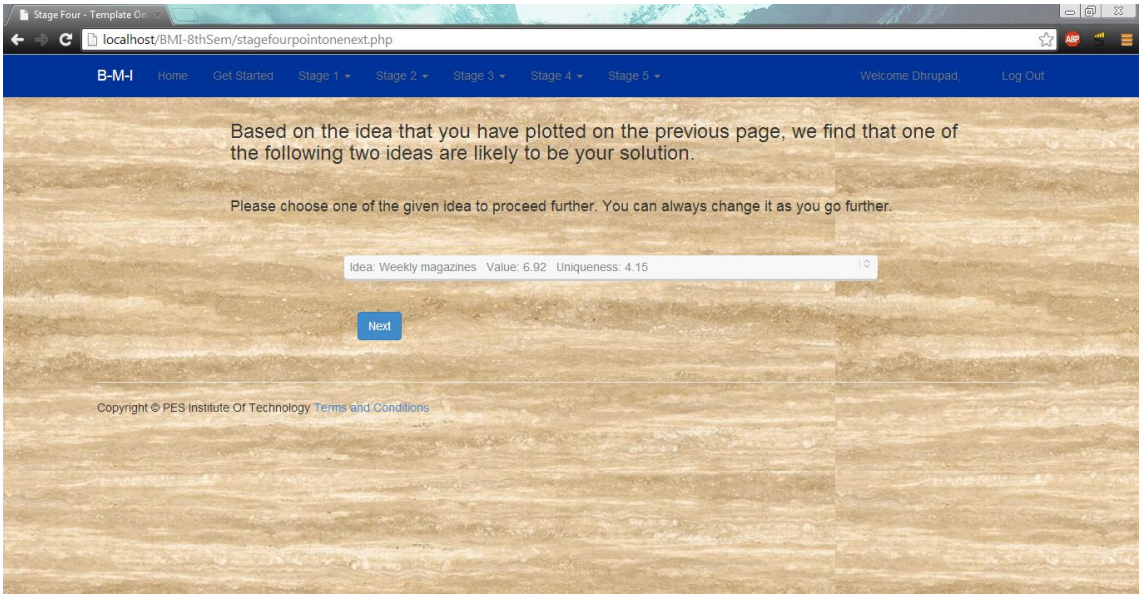


**Figure 10.7:** Smart Graph

Keyword based suggestion

```
----------------------------------HTML part
<a href="javascript:window.open('getinfrnet.php?myid=1131&myword=challenges','mywin
```

```
----------------------------------PHP part
Keywords are fetced based on the length of the words and the number of occurences a
echo json_encode(extract_keywords($str1,5,1);

function extract_keywords($str, $minWordLen = 3, $minWordOccurrences = 2, $asArray
{
//String matching is done
usort($keywords, 'keyword_count_sort');
$final_keywords = array();
foreach($keywords as $keyword_det)
{
//Check for the number of occurences
}
return $asArray ? $final_keywords : implode(',',$final_keywords);
}
```

```
----------------------------Javascript part
Using google apis search through the internet and display the result.
//Create a searchcontrol object
var searchControl = new google.search.SearchControl();
searchControl.setResultSetSize(3);
//set the options for the search
var options = new google.search.SearcherOptions();
options.setRoot(document.getElementById("searchcontrol"));
options.setExpandMode(google.search.SearchControl.EXPAND_MODE_PARTIAL );
//Set the type of search say web, blog, news, papers etc
searchControl.addSearcher(new google.search.WebSearch(),options);
options.setRoot(document.getElementById("suggestion"));
//Display the results in the specifies root node
```

```
var drawOptions = new google.search.DrawOptions();
drawOptions.setDrawMode(google.search.SearchControl.DRAW_MODE_TABBED);
searchControl.draw(document.getElementById("searchcontrol"),drawOptions);
```

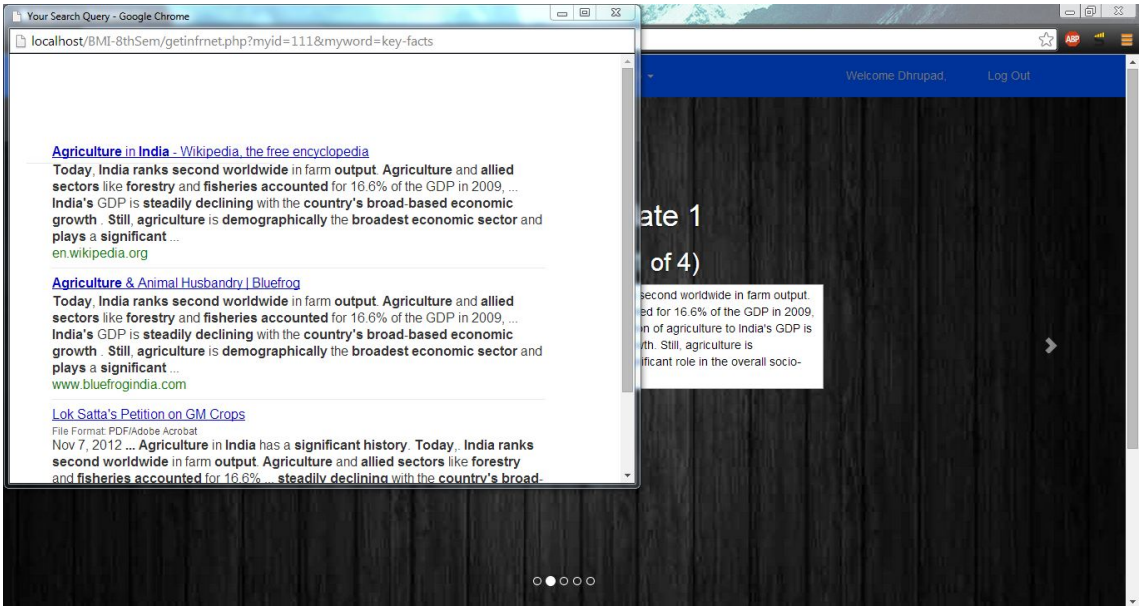


**Figure 10.8:** Keyword based suggestion

# 11. Integration

## 11.1 Integration Report

Different components of the product has been integrated differently. The components that are build indepenedently are given below:

1. Graph plots using flot package was developed independently for dummy values and points.
2. PDF generator using fpdf package. This was developed using php by taking into consideration the important fields that should be present in the final business model.
3. The main index page
4. The server side features like:
    - Storing into the xml file (database)
    - Fetching from the database
    - Storing the graph Co-ordinates into the text file
5. The components like navigation bar, the carousal and collapse bar were developed one after the other iteratively. This was replicated for the subsequent templetes.
6. The final business model templete has been replicated from www.businessmodelinnovator.com (a paid tool to develop business model). The important features from the source is extracted to build this tool.

We started building the GUI. The first approach was to build the navigation bar. After the navigation bar, the carousal was developed and then the collapse bar. This was developed as a part of various iterations inorder to beautify the user interface.

After the skeleton GUI, the next was integrating the different components in order to come up with the business model. Hence the charts that Intel has been using were replicated with the basic components like the text boxes, drop down menu, buttons, etc.

After this, the server side feature of storing into the database and fetching from database was added. The already developed independent component was integrated with the AJAX call for the corresponding signature.

The graph component was then added to the existing tool. It is build using flot package. Depending on the problems entered by the user in the first template of second stage, a drop down menu is generated. The user selects one problem and plots it along the axis provided. The co-ordinates are stored by an AJAX call into a text file. Similar integration is done for various ideas in first template of stage four.

The video component which has explantion of commonly used business model was integrated in order to enrich the user interaction and provide a clear picture of business model (assuming he is not exposed to this field in the past).

An extra carousal is provided in every template for the user to guide and help him fill the available fields. This carousal consists of an example for the predefined problem which is under consideration. This problem is used throughout the tool so that the user can relate to this problem and take inputs from it.

# 12. Future Scope

Right now the business model innovator focusses on people with limited knowledge of business models. It helps them in getting a basic idea of how business models are created.

- In the future this tool can be used by big organizations to create product specific business models which could include features like data mining. Data mining can be incorporated in various aspects like location feasibility, types of users, revenues, cost to narrow down the search results thus making it easier to analyze the model.
- Integrating with a community like techpedia.in (a community where various problems and their solutions are dicussed and feedback is given by other users) where business models are generated for the various problems and their solutions.
- Once a business model is genreated, we can provide a rating mechanism to get a feedback for the generated business model by different types of users and check its feasibility by the users of the community.
- The contents of the database i.e the xml file can be processed and can be used to refine the previously generated business model in each iteration.
- The tool can be added with a suggestion feature that will suggest the user by filling up the content during his first iteration based on the data entered in the previous stages. In order to add this feature, NLP (Natural Language Processing) and AI (Artificial Intelligence) can be used.
- Different types of organizations can add specific parameters that will enable them to genarate a better business model. Suppose SONY (a electronic good manufacturing company) wants to increase its selling, it can add an extra parameter of electricity prices across different region, or its sales in previous years in order to focus on region specific goods.

# 13. Conclusion

- The user has been provided with an interface that will guide him through the various stages involved in creating a business model.
- Widgets have been provided which will enable the user to traverse between stages.
- The data which the user enters is saved in the form of an xml file.
- When the user returns to a previously visited stage the data entered by him will still be present.
- Graphs have been provided which will help in gauging the importance versus frequency of occurance of a particular problem and also uniqueness verses value for the different ideas that are provided.
- Every user can log in with a username and a password. Whatever changes which the users have made will stay in their accounts. Each user has his/her own database where everything they write gets stored. Two users cant have the same username and all the passwords have been encrypted. The users can logout whenever they feel like.
- The final stage will provide the user with an assembled business model in the form of pdf.

# 14. Testing

## 14.1 Test Environment

The tool was tested in the following environment.

- **Hardware:**

  The hardware used for the testing is as follows:

  - Computers based on a Quad Core processor at the client end with 4 GB RAM.

- **Software:**

  The software used for the testing is as follows:

  - Operating System : Windows 7
  - Browser : Google Chrome and Mozilla Firefox
  - Local Server : Wamp and Xampp

## 14.2 Test Strategies

### 14.2.1 Static Testing

Static testing is a form of software testing where the software isn't actually used. This is in contrast to dynamic testing. It is generally not detailed testing, but checks mainly for the sanity of the code or algorithm. It is primarily checking of the code and/or manually reviewing the code to find errors. This type of testing can be used by the developer who wrote the code, in isolation. Type of Static Testing done:

- Peer Review – The code that was developed by one team member was reviewed by one of the other two team member.
- Fagan Inspection – After adding each feature, fagan inspection was done with all the team members in order to evaluate te output.
- Code Walkthrough – The developer who developed walked through the code to find syntax errors and a few semantic errors.

### 14.2.2 Unit Testing

Unit Testing is the process of testing individual components of the system. The goal of unit testing is to expose faults in these components. The most common approach to unit testing requires drivers and stubs to be written. The drivers and stubs in our case were the URL to check the server side code, the dummy values to check the working of graphs, empty carousals to check the widgets etc. Here, different modules are tested independently and their functionalities are checked. In the case of this project, Unit Testing has been done by mostly the developer at every step during developing. Testing and development went hand in hand. The various functionalities that are tested as a part of Unit Testing are explained from Table 12.1 to Table 12.10.

### 14.2.3 Integration Testing

Integration testing is the phase in software testing in which individual software modules are combined and tested as a group. It occurs after unit testing. Some types of integration testing are big bang, top-down, bottom-up, Collaboration Integration, Backbone Integration, Layer Integration, Client/Server Integration, Distributed Services Integration and High-frequency Integration. We ave used a combination of Client/Server Integration and Collaboration Integration. The Integration Testing is explained from Table 12.11 to Table 12.23

## 14.3 Test Cases

**Table 14.1:** Unit Testing Test Case 1

| | |
|---|---|
| Sl. No. of Test Case | UT - TC - 1 |
| Name Of Test | Test to verify the working of widgets |
| Item/Feature being Tested | Carousal |
| Sample Input | Click on the arrow |
| Expected Output | Navigates to the next widget |
| Actual Output | As expected |
| Remarks | Test passed |

**Table 14.2:** Unit Testing Test Case 2

| | |
|---|---|
| Sl. No. of Test Case | UT - TC - 2 |
| Name Of Test | Test to verify collapse bar |
| Item/Feature being Tested | Collapse bar |
| Sample Input | Click on the collapse bar |
| Expected Output | When clicked, the collapse bar collapses and text is shown |
| Actual Output | As expected |
| Remarks | Test passed |

**Table 14.3:** Unit Testing Test Case 3

| Sl. No. of Test Case | UT - TC - 3 |
|---|---|
| Name Of Test | Test to verify the Navigation Bar |
| Item/Feature being Tested | Navigation Bar |
| Sample Input | Click on the Navigation Bar |
| Expected Output | We can go to any stage from the Navigation Bar |
| Actual Output | As expected |
| Remarks | Test passed |

**Table 14.4:** Unit Testing Test Case 4

| Sl. No. of Test Case | UT - TC - 4 |
|---|---|
| Name Of Test | Storing in corresponding node of the xml file |
| Item/Feature being Tested | xml node and its syntax |
| Sample Input | Data enterd by the user and its node value |
| Expected Output | Data stored within the given node |
| Actual Output | Error because nodes cannot simply numeric charecters |
| Remarks | Test Failed at first. Test passed after review |

**Table 14.5:** Unit Testing Test Case 5

| Sl. No. of Test Case | UT - TC - 5 |
|---|---|
| Name Of Test | Storing in database |
| Item/Feature being Tested | Data being stored in the database |
| Sample Input | Entering data in the text box |
| Expected Output | Data gets stored in the xml file |
| Actual Output | As Expected |
| Remarks | Test passed |

**Table 14.6:** Unit Testing Case 6

| Sl. No. of Test Case | UT - TC - 6 |
|---|---|
| Name Of Test | Fetching of data from the database |
| Item/Feature being Tested | Data being fetched from Database |
| Sample Input | Data entered between tags |
| Expected Output | Data written between the tags should be fetched |
| Actual Output | As expected |
| Remarks | Test passed |

**Table 14.7:** Unit Testing Test Case 7

| Sl. No. of Test Case | UT - TC - 7 |
|---|---|
| Name Of Test | Data stored in proper node |
| Item/Feature being Tested | The xml file (database) |
| Sample Input | Data along with the corresponding id |
| Expected Output | Data stored in corresponding node |
| Actual Output | As expected |
| Remarks | Test passed |

**Table 14.8:** User Interface Test Case 8

| Sl. No. of Test Case | UT - TC - 8 |
|---|---|
| Name Of Test | Indentation of the PDF |
| Item/Feature being Tested | PDF Generator |
| Sample Input | Click on the submit button after the final stage |
| Expected Output | Once the pdf is generated output should be properly indented |
| Actual Output | As expected |
| Remarks | Test passed |

**Table 14.9:** Unit Testing Test Case 9

| Sl. No. of Test Case | UT - TC - 9 |
|---|---|
| Name Of Test | Plotting of Graph |
| Item/Feature being Tested | Graph |
| Sample Input | We enter the Co-ordinate values and click on the submit button |
| Expected Output | Graph is created |
| Actual Output | As expected |
| Remarks | Test passed |

**Table 14.10:** Unit Testing Test Case 10

| Sl. No. of Test Case | UT - TC - 10 |
|---|---|
| Name Of Test | Storing of Graph Co-ordinates |
| Item/Feature being Tested | Graph Co-ordinates |
| Sample Input | Enter the Graph Co-ordinates from the drop down menu |
| Expected Output | Co-ordinates gets stored in a text file |
| Actual Output | As expected |
| Remarks | Test passed |

**Table 14.11:** Unit Testing Test Case 11

| Sl. No. of Test Case | UT - TC - 11 |
|---|---|
| Name Of Test | Finding Key Words for Suggestion-search |
| Item/Feature being Tested | Key-word search Algorithm |
| Sample Input | XML value of the needed Tag |
| Expected Output | Key words from the tag returned in form of String |
| Actual Output | As expected |
| Remarks | Test passed |

**Table 14.12:** Unit Testing Test Case 12

| Sl. No. of Test Case | UT - TC - 12 |
|---|---|
| Name Of Test | Finding Key Words from the Current Widget for User-Suggestion |
| Item/Feature being Tested | Key-word search Algorithm for Large Input |
| Sample Input | XML values for alll tags in the Widget |
| Expected Output | Key words returned in form of String |
| Actual Output | Not all the expected Keywords are returned |
| Remarks | Test failed |

**Table 14.13:** Unit Testing Test Case 13

| Sl. No. of Test Case | UT - TC - 13 |
|---|---|
| Name Of Test | Finding highest relevance points in the user-graph |
| Item/Feature being Tested | Algorithm to get High relevance graph plots |
| Sample Input | Graph points for each problem defined by user |
| Expected Output | Problem points with higher relevance |
| Actual Output | As Expected |
| Remarks | Test Passed |

**Table 14.14:** Integration Testing Test Case 1

| Sl. No. of Test Case | IT - TC - 1 |
|---|---|
| Name Of Test | Data staying on the screen when user refreshes |
| Item/Feature being Tested | Fetching from database |
| Sample Input | Enter data in the text box |
| Expected Output | When page is refreshed data should stay on the screen |
| Actual Output | As expected |
| Remarks | Test passed |

**Table 14.15:** Integration Testing Test Case 2

| Sl. No. of Test Case | IT - TC - 2 |
|---|---|
| Name Of Test | Navigation between pages |
| Item/Feature being Tested | Navigation Bar |
| Sample Input | Clicking on Next when present in stage 1 |
| Expected Output | Navigation should happen to stage 2 and not any other stage |
| Actual Output | As expected |
| Remarks | Test passed |

**Table 14.16:** Integration Testing Test Case 3

| Sl. No. of Test Case | IT - TC - 3 |
|---|---|
| Name Of Test | Generation of pdf from the final stage |
| Item/Feature being Tested | pdf generator |
| Sample Input | Pressing the submit button at the end of stage 5 |
| Expected Output | Generation of the final PDF |
| Actual Output | As expected |
| Remarks | Test passed |

**Table 14.17:** Integration Testing Test Case 4

| Sl. No. of Test Case | IT - TC - 4 |
|---|---|
| Name Of Test | Submitting an empty text box |
| Item/Feature being Tested | Database and Error detection in te UI |
| Sample Input | Submitting an empty text box |
| Expected Output | Error sould be displayed and doesn't allow to go to next stage |
| Actual Output | No error is shown, node in database is empty and goes to next stage |
| Remarks | Test failed |

**Table 14.18:** Integration Testing Test Case 5

| Sl. No. of Test Case | IT - TC -5 |
|---|---|
| Name Of Test | Edititng from 2 different clients |
| Item/Feature being Tested | Daatabase Updation |
| Sample Input | Edit any field from 2 different locations |
| Expected Output | If one changes, it should be reflected on the second user |
| Actual Output | As Expected, but the update is reflected after refreshing the page |
| Remarks | Test Case failed but needs review inorder to pass. |

**Table 14.19:** Integration Testing Test Case 6

| Sl. No. of Test Case | IT - TC - 6 |
|---|---|
| Name Of Test | User logging in |
| Item/Feature being Tested | Log In Feature |
| Sample Input | User enters the username and password |
| Expected Output | User is able to log in |
| Actual Output | As expected |
| Remarks | Test passed |

**Table 14.20:** Integration Testing Test Case 7

| Sl. No. of Test Case | IT - TC - 7 |
|---|---|
| Name Of Test | User logging out |
| Item/Feature being Tested | Log out Feature |
| Sample Input | User presses on the log out button |
| Expected Output | User is able to log out |
| Actual Output | As expected |
| Remarks | Test passed |

**Table 14.21:** Integration Testing Test Case 8

| Sl. No. of Test Case | IT - TC - 8 |
|---|---|
| Name Of Test | User registering |
| Item/Feature being Tested | Registering feature |
| Sample Input | User enters his/her details |
| Expected Output | Once the users register their details they should be able to log in |
| Actual Output | As expected |
| Remarks | Test passed |

**Table 14.22:** Integration Testing Test Case 9

| Sl. No. of Test Case | IT - TC - 9 |
|---|---|
| Name Of Test | Two people with the same username |
| Item/Feature being Tested | Username |
| Sample Input | Two users register with the same username |
| Expected Output | Alert box shows that username exists |
| Actual Output | As expected |
| Remarks | Test Passed |

**Table 14.23:** Integration Testing Test Case 10

| Sl. No. of Test Case | IT - TC - 10 |
|---|---|
| Name Of Test | User logging out at any stage |
| Item/Feature being Tested | Log Out Feature |
| Sample Input | Logging out from any page |
| Expected Output | User is able to log out of any page |
| Actual Output | As expected |
| Remarks | Test Passed |

**Table 14.24:** Integration Testing Test Case 11

| Sl. No. of Test Case | IT - TC - 11 |
|---|---|
| Name Of Test | Password Encryption |
| Item/Feature being Tested | Password Feature |
| Sample Input | Password |
| Expected Output | Password is generated in a hashed form and stored |
| Actual Output | As expected |
| Remarks | Test Passed |

**Table 14.25:** Integration Testing Test Case 12

| Sl. No. of Test Case | IT - TC - 12 |
|---|---|
| Name Of Test | User logging in |
| Item/Feature being Tested | Log In Feature |
| Sample Input | User enters the Username and Password |
| Expected Output | User is able to log in |
| Actual Output | As expected |
| Remarks | Test Passed |

**Table 14.26:** Integration Testing Test Case 13

| Sl. No. of Test Case | IT - TC - 13 |
|---|---|
| Name Of Test | Separate Database for user |
| Item/Feature being Tested | Database |
| Sample Input | Users register using a Username and Password |
| Expected Output | Every user has a separate database |
| Actual Output | As expected |
| Remarks | Test Passed |

**Table 14.27:** Integration Testing Test Case 14

| Sl. No. of Test Case | IT - TC - 14 |
|---|---|
| Name Of Test | Attach the keyword algorithm module to each widget |
| Item/Feature being Tested | Keyword Module |
| Sample Input | XML data of current Widget |
| Expected Output | A string with keywords |
| Actual Output | As expected |
| Remarks | Test Passed |

**Table 14.28:** Integration Testing Test Case 15

| Sl. No. of Test Case | IT - TC - 15 |
|---|---|
| Name Of Test | Genrateing the enhanced PDF final output |
| Item/Feature being Tested | PDF Module |
| Sample Input | Processed data of whole database |
| Expected Output | Predefined-format PDF |
| Actual Output | As expected |
| Remarks | Test Passed |

**Table 14.29:** Unit Testing Summary

| Summary Assessment | Total Number of Test Cases | % of Test Cases |
|---|---|---|
| Test Cases Planned | 13 | 100% |
| Test Cases Run | 13 | 100% |
| Test Cases Passed | 11 | 84.6% |
| Test Cases Failed | 2 | 15.4% |
| Test Cases Reviewed | 2 | 100% |
| Test Cases yet to Review | 0 | 0% |

**Table 14.30:** Integration Testing Summary

| Summary Assessment | Total Number of Test Cases | % of Test Cases |
|---|---|---|
| Test Cases Planned | 15 | 100% |
| Test Cases Run | 15 | 100% |
| Test Cases Passed | 13 | 86.67% |
| Test Cases Failed | 2 | 13.33% |
| Test Cases Reviewed | 0 | 0% |
| Test Cases yet to Review | 2 | 100% |

# 15. User Manual


**Figure 15.1:** Structure(src: Intel entrepreneurship Workshop PDF)

1. **Structure)**
   - Stage 1 – Understand
   - Stage 2 – User
   - Stage 3 – Technology
   - Stage 4 – Ideas
   - Stage 5 – Business Model Canvas
   - Stage 6 – Pitch
   - Stage 7 – Continue
2. **Stage 1 – Understand**

   This stage gives you time to read the case study, discuss it, analyze its various details and dissect some of the sub elements or related topics. Your work in this stage will help you create a brief and precise problem description at the end of the USER stage.

   It is critically important that your starting point is sound and solid, as it forms the basis and foundation for the entire business model. So please take some time to read and discuss the case and use the tasks in this stage to get a solid grounding and understanding of the problem.

   It is an extremely valuable use of time to understand what you want to improve or create! Very often people solve the wrong problem or fail to understand the problem correctly. Try not to fall into that trap! Once you have read and briefly discussed the case study please use the UNDERSTAND template to summarize your findings. The main output from this stage is a solid understanding of the overall challenge and the people involved.

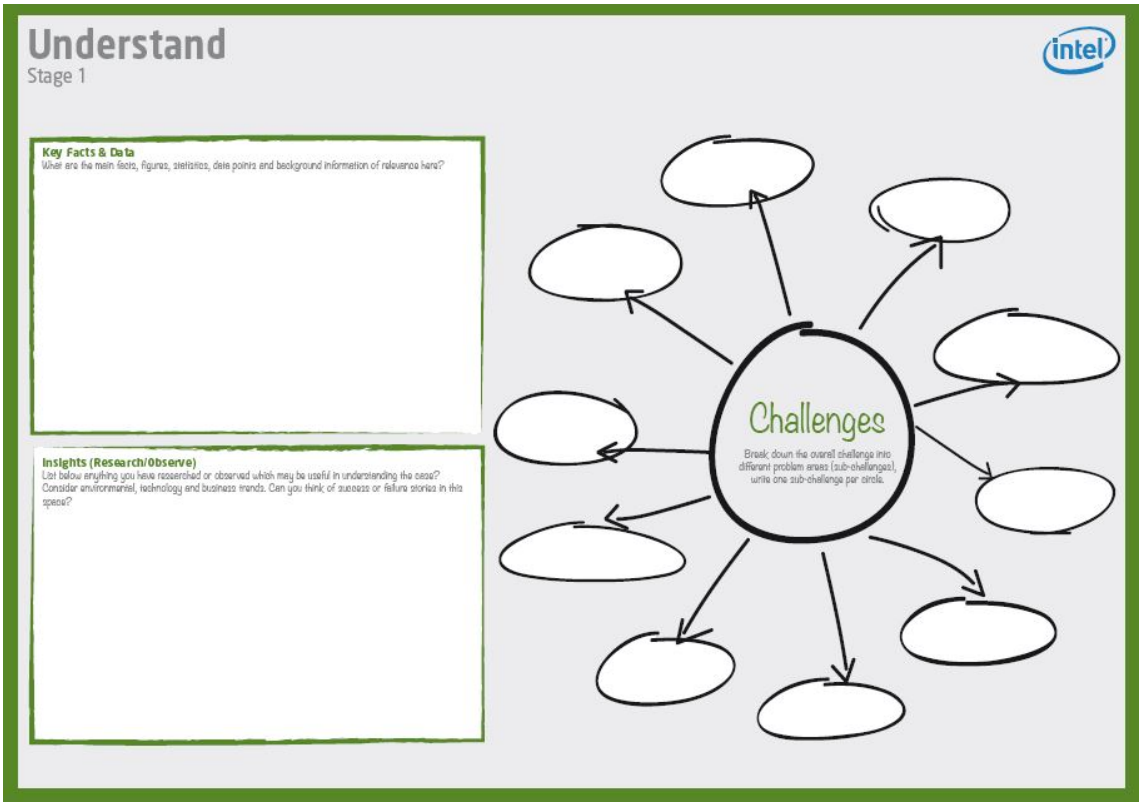


**Figure 15.2:** Stage One (src: Intel entrepreneurship Workshop PDF)

3. **Stage 2 – User**

   A product or service will only be successful if the users want to use it. Therefore, we have to make the user an important part of the innovation process by learning about their needs early in the process. Before we start developing ideas for a solution, we must listen to our potential users and make sure that we have a good understanding of the situation and their problems. Information is power – The more you know about the user, the more likely it is that you can create successful innovations. The output from this stage is a detailed description of your user segment and a specific problem statement.

   (a) Template 1 – Based on sub-challenges from stage 1, different user segments are listed that have been identified. One user in one text box. Based on the user segment that you have selected, list all your user's problem.

   (b) Template 2 – A graph of Frequency versus Importance is generated with Frequency on Y-axis and Importance on X-axis. Using the drop down menu, the user can seelct the problem and plot it on the graph. It is suggested that the problem selected by the user should have high Frequency and high Importnace.

   (c) Template 3 – Give a brief description of the core problem and make a list of other related sub-problems. Also formulate one very precise sentence that summarizes exactly the problem that you wish to solve.

4. **Stage 3 – Technology**

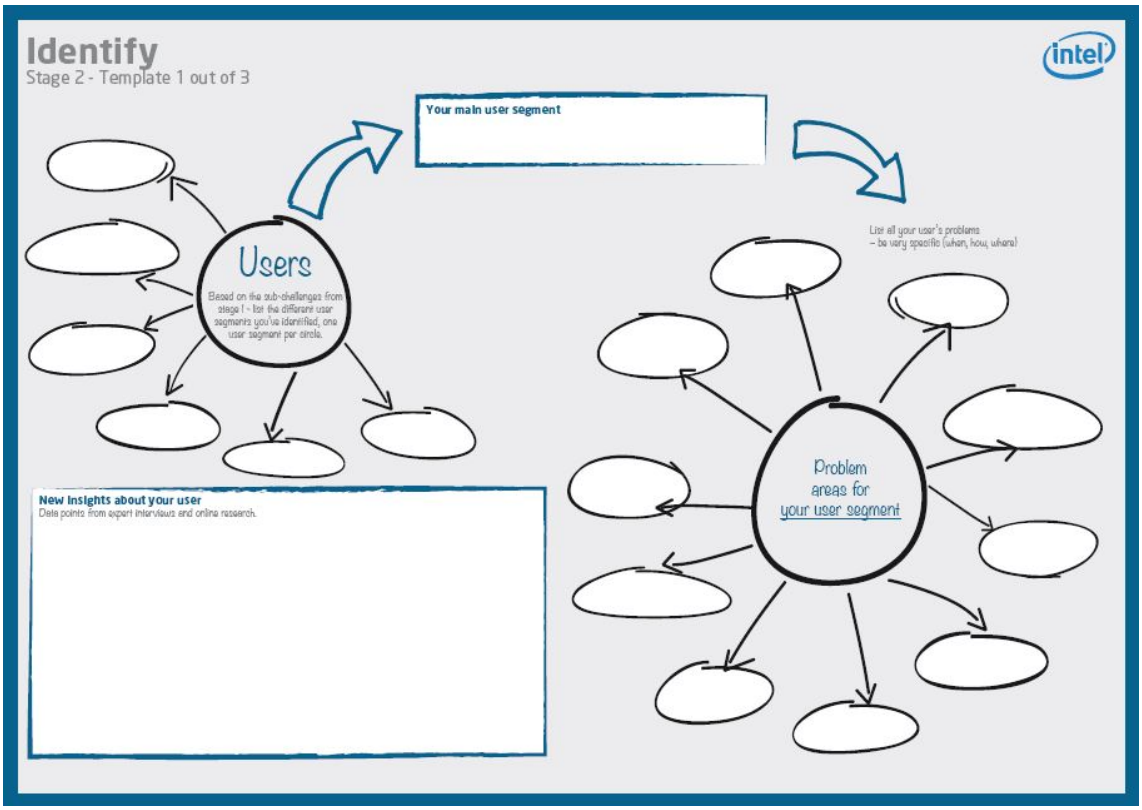


**Figure 15.3:** Stage Two - Template One (src: Intel entrepreneurship Workshop PDF)

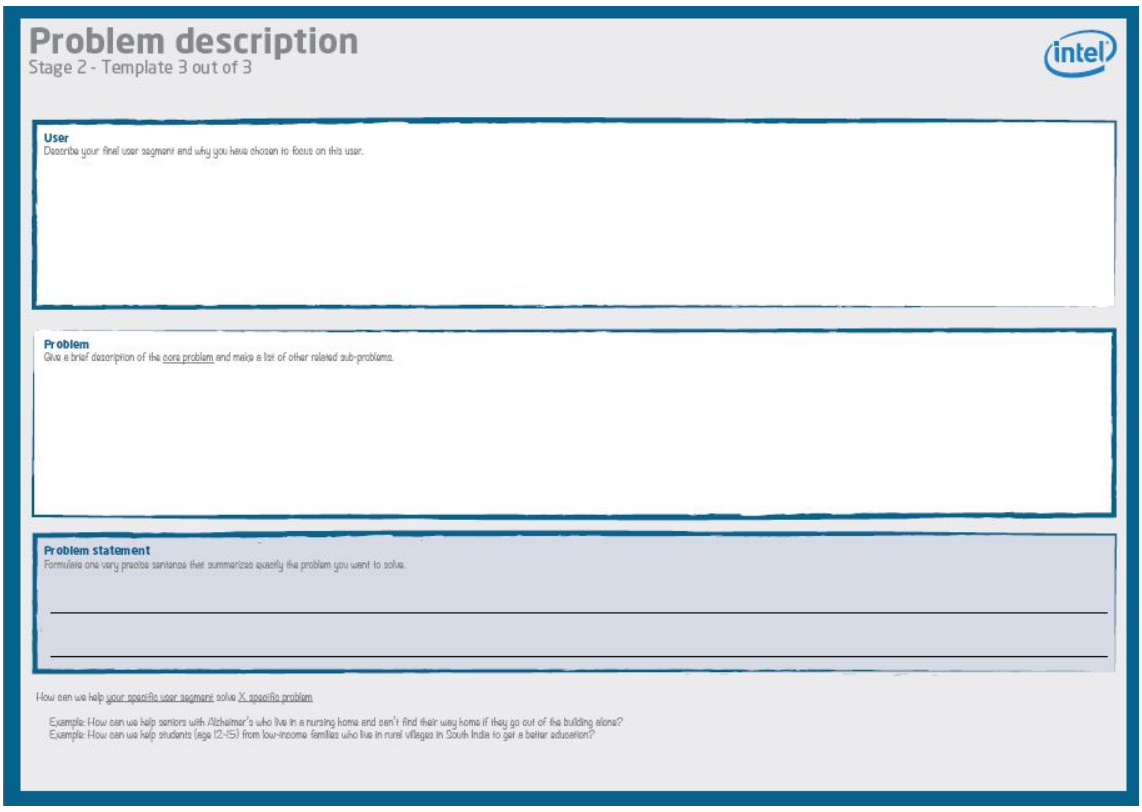


**Figure 15.4:** Stage Two - Template Three (src: Intel entrepreneurship Workshop PDF)

This stage is about discovering the new technologies that can help solve the problem you are working on. A new technology is often the starting point of innovation because it can solve a known problem in a new and better way than current solution/technologies. Talented innovators therefore always try to be up-to-date on the latest tech trends and break-through research in their field.

5. **Stage 4 – Ideas**

   Creativity is essential in all start ups and to all break-through innovations and it is therefore a core element of the ideation process. Creativity is defined as the ability to look at a problem from a new angle and think outside the box to solve it. "*Without creativity, there would be no progress, and we would be forever repeating the same patterns.*" – Edward de Bono

   (a) Template 1 – All possible ideas sould be taken into consideration despite the level of uniqueness and value. The idea present with high uniqueness and high value should be selected. The user should iterate throug all possible ideas, even though the idea are not feasible.

   (b) Template 2 – The idea selected in the previous stage should be decribed. The solution to the problem should be described keeping user and the competition in mind. The cost factor and revenue are taken into play. This templete will become the basis for the final business model canvas.

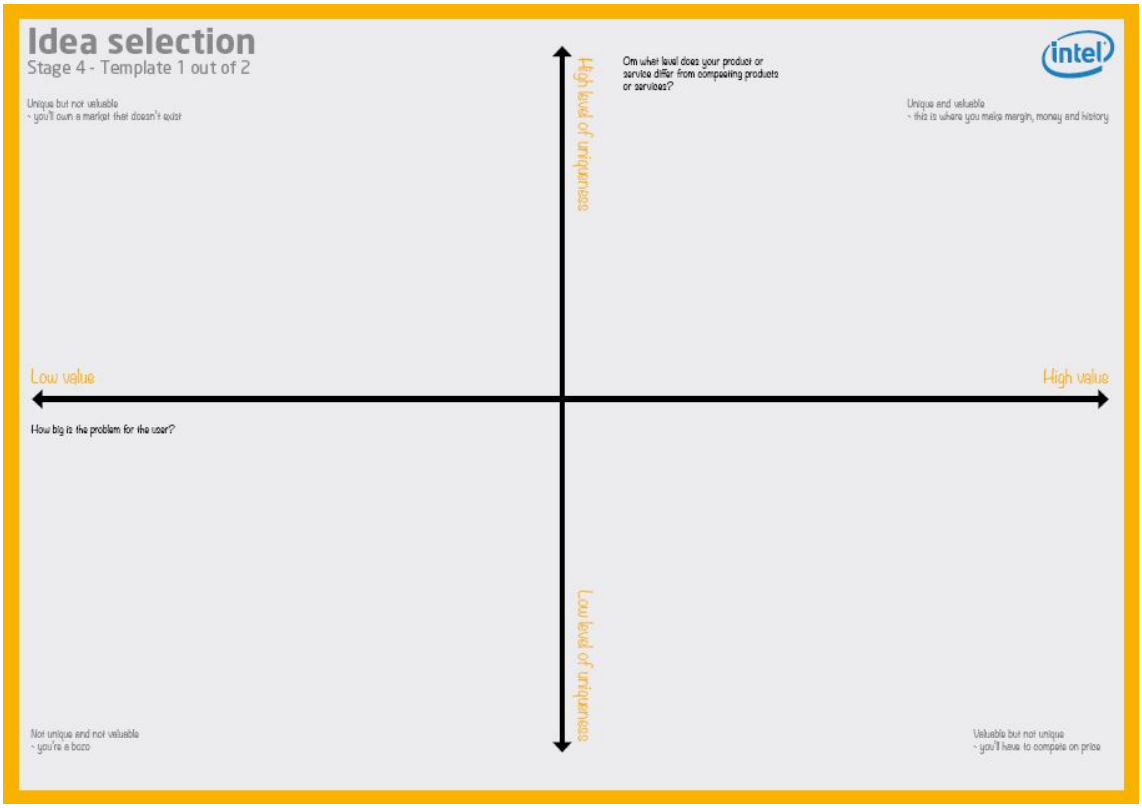


**Figure 15.5:** Stage Four - Template One (src: Intel entrepreneurship Workshop PDF)

6. **Stage 5 – Business Model Canvas**

   The business model canvas consist of all the integrated key features involved in creating the business model. It is the final stage of the buisness model covering all the key aspects. Once this stage has been completed a pdf will be generated with the final business model. This final stage is summary of all the previous stages. The key aspects of the business model canvas are:

   (a) Key Partners

   (b) Key Activities

   (c) Key Resources

   (d) Value Propositions

   (e) Customer Relationships

   (f) Channels

   (g) Customer Segments

   (h) Cost Structure

   (i) Revenue Streams

   This procedure is reiterated from the first stage till the fifth stage. By doing this, the business model canvas can be refined further. The user should always have an alternative business model as a back up, so that if one model fails, the other model can be used.

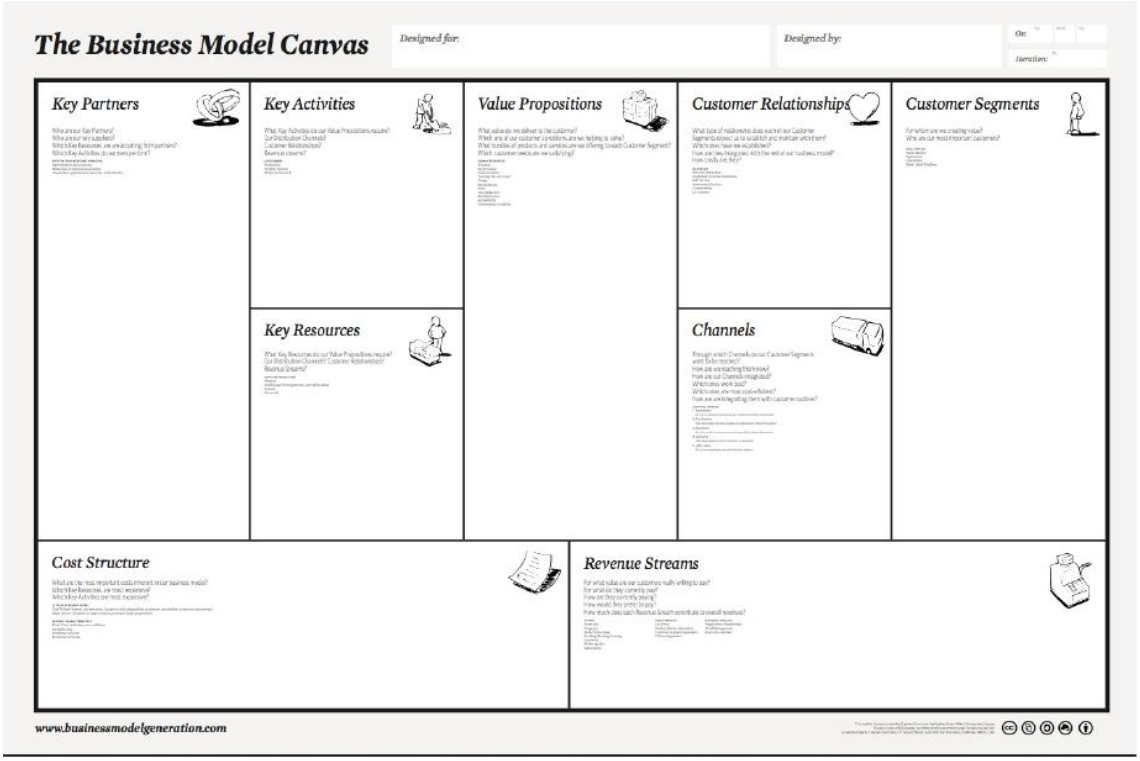


**Figure 15.6:** Stage Five - Template Two (src: Intel entrepreneurship Workshop PDF)

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- Faster front End *[4](www.getbootstrap.com)*
- Flot jQuery library *[5](www.flotcharts.org)*
- A package to generate pdf *[6](www.fpdf.org)*
- Video Integration *[7](www.youtube.com)*
- Versioning and maintaining code *[8](www.github.com)*