# PROJECT: PHASE I

# Web Puppies' Website Designing Process

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1. **Overview**

This project has chosen the company, Web Puppies, which is one of the leading web development and digital solutions companies in Southeast Asia. It is a vendor company which provides various services for its clients that cater specifically to their needs. The project drills down on their key service, which is the provision of web development solutions and identifies how this business process can benefit from proper data management.

2. **Process**

The process begins with a client/company approaching Web Puppies requesting a website to be developed showcasing all relevant information about their company and its operations. The result of the process is a fully developed and operational website for the client/company in accordance with the agreement between the business development representative and the client/company. As the terms of the contract between both parties ends upon the client receiving a fully functional and operational website, the result is discrete and clearly identifiable.

3. **Stakeholders**

In this process, the key stakeholder would be the client/company as they are impacted by the business process by receiving a result at the end of the process. The other stakeholders identified in the business process are parties from the website vendor:

a. representative from the business development team,
b. web designer,
c. website developer, and
d. finance department

These parties are also impacted by the business process.

4. **Problems in the business process**

While the process can run smoothly as depicted in the swimlane diagram, the problems/gaps arise when there are complications to the process.

- The fundamental issue with the current process is that all interactions with the client take place through one actor i.e. the business development representative. The company takes a traditional project management approach where stakeholders are only involved at specific milestones through the process. Although it minimizes the client's interaction with various representatives from the Web Puppies team, it is time-consuming and inefficient to route all changes through one employee. Given the nature of the project and descriptive changes involved, feedback from either Web Puppies or the client could be lost-in-translation when it is communicated to the other party. In a realistic scenario, the client will likely go through several drafts of both the web design and mockup before agreeing to the final version of the website increasing the chances of miscommunication.

- The process lacks an internal database system which could streamline the process if integrated. The existing process will face roadblocks if the business development representative is unable to perform. For example, there could be potential delays in the process if the business development representative is unable to attend a meeting with the client to secure feedback or a meeting to convey client's feedback to the Web Puppies team. Furthermore, the lack of a database system hinders the company from having a bird's eye view on the case progress or tracking specific information about the case.

5. **Solution**

To fix the gaps identified in the business process, the following steps can be taken.

**1. Agile approach to project management**

By using an agile project management approach and ensuring a fluid structure is maintained, client's feedback can be handled better, especially when several iterations of feedback is received. To ensure more fluidity in the process, the role of the business development representative should not be all encompassing. Upon securing the order from the client/company, the business development representative should include the web designer and website developer assigned to the case in all subsequent client-based interactions. This will minimize any information from being misinterpreted and simultaneously, it will allow Web Puppies to manage the client's expectations as a team.

In the TO-BE diagram, the business development representative will accept and load the request into the company's database. Thereafter, the case will be assigned to a client team comprising a website designer and a web developer. This team will be directly involved in meeting the client's brief and preparing mock-up websites as well as seeking and assessing possible implementation of client feedback. The TO-BE process will also include a specific pre-agreed number of meetings between the client and the website team to limit the possible iterations of revisions to the draft web designs and website mockups.

**2. Introduction of database system**

The lack of a consolidated space comprising detailed insights into each client order can be rectified with the introduction of a database system. This system allows all information related to a specific client order to be consolidated and updated at the time of the event/action taking place. It will allow all stakeholders to have a bird's eye overview of the process in its entirety without having to rely on word-of-mouth or email communication from a single representative. Finally, it will also ensure case timelines are met to a large extent.

In the TO-BE diagram, all updates to the case by each stakeholder is keyed in real-time onto the database system. This will also include feedback from the clients on the draft web design and website mock-up, thereby allowing all parties to view the feedback simultaneously.

## 6. Benefits of solution

There are several benefits that Web Puppies can reap by fielding a comprehensive team and integrating a database system into the process. By improving the efficiency of the process,

1. Client satisfaction of the product and service will improve;
2. It will lead to better resource utilization;
3. There will be a reduction in delays to project timeline;
4. Complications to project scope can be managed better;
5. All Web Puppies' stakeholders can clearly track project status/updates throughout the process;
6. Minimize potential back-and-forth with the client as all decisions and discussions (such as feedback from the client) are consolidated in the database and can be accessed with ease.

In view of the above advantages, Web Puppies should strongly consider implementing changes to optimize its process.

## 7. Business rules

To build the entity relationship diagram, the following business rules have been taken into consideration.

- A **client** can place one or many orders. However, one and only one order can belong to each **client**.
- An **order** may contain only one type of product at a time. However, a **product** may be part of one or many different **orders**.
- Each **order** is assigned to a client team depending on the **product** associated with the order. The employee working on the project could comprise a business development representative, a website developer or website designer through the project. Therefore, a specific associative entity, '**Portfolio**' is created to provide an overview of each **order**, its start and end dates as well as the employee ID involved at each stage of the project.
- **Employees** can work on one or many **portfolios** at a single time, but a **portfolio** can be assigned to a certain employee at a time.
- Web Puppies' **employees** can work in multiple departments. One such department shown in the ERD is the **Finance department**, a subtype entity. An **employee** can only work in a single department. However, they are not employed solely in the **finance department**.
- The **finance department** employees can be working on different project types such as accounting, financial reporting or budget forecasting. In order to process the billing associated with each order, each **finance department employee** can work on one or many **invoices**. However, each **invoice** can be prepared by one and only one such **employee**.

- **Orders** generate several **invoices** throughout the course of the project. Therefore, each **order** can have multiple **invoices**. However, each **invoice** can only be linked to one and only one **order**.

## 8. Data dictionary

The data dictionary describes the entities used to build the entity relationship diagram along with each entities' attributes, their data types, descriptions and examples showcasing the expected output in the system.

Majority of the attributes in the entities are mandatory and will not accept NULL values. The exception is the Nationality attribute which allows NULL values to be inputted.

Finally, the data dictionary also describes if the attributes are used as keys i.e. primary keys (PK) or foreign keys (FK). If not, they are shown as NA.

| **Attribute** | **Data type** | **Required or Optional** | **Keys** | **Description** | **Example** |
|---|---|---|---|---|---|
| **Client -** This entity consolidates all instances of Web Puppies' clients | | | | | |
| Client_id | int(11) | Required. NULL value not allowed. | PK | Unique number identifying clients | 458953783 |
| Company_name | varchar (20) | Required. NULL value not allowed. | NA | Company's name | Credit Suisse |
| Company_address | varchar (40) | Required. NULL value not allowed. | NA | Registered address of company | 1532 Crim Lane |
| Phone_number | varchar (20) | Required. NULL value not allowed. | NA | Phone number of client | 515.123.4567 |
| Point_of_contact | varchar (20) | Required. NULL value not allowed. | NA | Designated point of contact from the client name | Joe |
| **Order** - This entity consolidates all instances of job orders received by Web Puppies from clients | | | | | |
| Order_id | int(11) | Required. | PK | Unique identifier for | 6231865637 |

| Attribute | Data type | Required or Optional | Keys | Description | Example |
|---|---|---|---|---|---|
| | | NULL value not allowed. | | each order | |
| Start_date | date | Required. NULL value not allowed. | NA | Start date of order | 2011-03-28 |
| Product_code | int(11) | Required. NULL value not allowed. | FK | Unique identifier from entity - Product | 1276302367 |
| Client_id | int(11) | Required. NULL value not allowed. | FK | Unique identifier from entity - Client | 3198517281 |
| **Product -** This entity consolidates the different types of services that are provided by Web Puppies as products. | | | | | |
| Product_code | int(11) | Required. NULL value not allowed. | PK | Unique identifier to distinguish a product type | 8405824033 |
| Product_type | varchar (20) | Required. NULL value not allowed. | NA | Identifies the type of products provided by Web Puppies i.e 1) website development or 2) website maintenance | Website Development |
| **Portfolio** - This is an associative entity created to address the many-to-many relationship between the entities **Product** and **Employee**. It consolidates an overview of the ongoing projects by linking incoming orders with the employees working on the order. | | | | | |
| Portfolio_id | int(11) | Required. NULL value not allowed. | PK | Unique identifier which is associated with each portfolio i.e. an associative entity which provides an | 3308981235 |

| Attribute | Data type | Required or Optional | Keys | Description | Example |
|---|---|---|---|---|---|
| | | | | overview of the project details and employees associated with it | |
| Employee_id | int(11) | Required. NULL value not allowed. | FK | Unique identifier from entity - Employee | 7136965050 |
| Product_code | int(11) | Required. NULL value not allowed. | FK | Unique identifier from entity - Product type | 8314468230 |
| Start_date | date | Required. NULL value not allowed. | NA | Starting date of the project | 2015-02-04 |
| End_date | date | Required. NULL value not allowed. | NA | Ending date of the project | 2015-06-05 |
| **Employee** - This is a supertype entity which consolidates all details of employees working for Web Puppies. | | | | | |
| Employee_id | int(11) | Required. NULL value not allowed. | PK | Unique identification number created for each employee | 1510911336 |
| First_name | varchar (20) | Required. NULL value not allowed. | NA | First name of employee | Rick |
| Last_name | varchar (20) | Required. NULL value not allowed. | NA | Last name of employee | Nam |
| Job_title | varchar (35) | Required. NULL value not allowed. | NA | Job title of employee | Manager |
| Address | varchar (40) | Required. NULL value not allowed. | NA | Registered home address of employee | 4593 Rogers Street |

| Attribute | Data type | Required or Optional | Keys | Description | Example |
|---|---|---|---|---|---|
| Date_of_hire | date | Required. NULL value not allowed. | NA | Employee's date of joining | 2009-11-23 |
| Date_of_birth | date | Required. NULL value not allowed. | NA | Employee's date of birth | 2000-12-07 |
| Employee_email | varchar (25) | Required. NULL value not allowed. | NA | Employee's email address | jn123@microsoft.com |
| Nationality | varchar (25) | Optional. NULL value allowed. | NA | Employee's nationality as on passport | Canadian |
| Employee_Type | varchar (10) | Required. NULL value not allowed. | NA | Subtype discriminator attribute describing employee's department | F |
| **Finance Department -** This is a subtype entity which identifies specific employees working for the finance department | | | | | |
| FD_employee_id | int(11) | Required. NULL value not allowed. | PK | Unique identification number created for each employee working in the Finance Department | 6796775596 |
| Subdepartment | varchar (35) | Required. NULL value not allowed. | NA | Different type of projects worked on by employees - accounting, budget forecast | Accounting |
| **Invoice** - This entity consolidates details of all invoices issued by Web Puppies to clients during or upon the completion of job orders. | | | | | |
| Invoice_ID | int(11) | Required. NULL value | PK | Unique identifier associated with each | 1444052076 |

| Attribute | Data type | Required or Optional | Keys | Description | Example |
|---|---|---|---|---|---|
| | | not allowed. | | generated invoice | |
| FD_employee_ID | int(11) | Required. NULL value not allowed. | FK | Unique identifier from entity - Finance Department | 5837911924 |
| Order_ID | int(11) | Required. NULL value not allowed. | FK | Unique identifier from entity - Job Order | 8023480307 |
| Due_date | date | Required. NULL value not allowed. | NA | Date that the payment is due for payment by client | 2005-09-01 |
| Date_of_payment | date | Required. NULL value not allowed. | NA | Date that the payment is received from the client | 2005-09-09 |
| Bank_account_number | int(11) | Required. NULL value not allowed. | NA | Bank account number of the client | 280-6651-449 |
| Routing_number | int(11) | Required. NULL value not allowed. | NA | Routing number of the client's bank | 866.837.6566 |
| Amount | int(11) | Required. NULL value not allowed. | NA | Amount charged to the client in each invoice | $133.56 |

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