

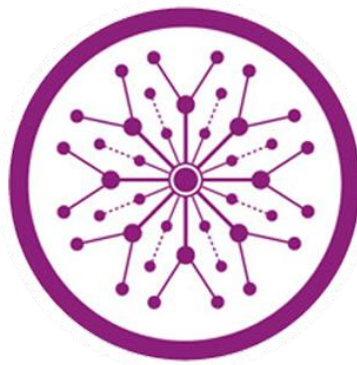
Your BPO Partner

Final Year Project

Session 2018-2022

A project submitted in partial fulfillment of the degree of

BS in Computer Science



Department of Computer Science

Faculty of Computer Science & Information Technology

Superior University, Lahore

FALL 2021

Type (Nature of project)	[<input checked="" type="checkbox"/>] Development [<input type="checkbox"/>] Research [<input type="checkbox"/>] R&D			
Area of specialization	Web application			
FYP ID	FYP-BCSM-F21-045			
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Plagiarism Free Certificate

This is to certify that, I Muhammad Yasir S/D of Muhammad Bashir, group leader of FYP under registration no BCSM-F18-331 at Computer Science Department, The Superior university, Lahore. I declare that my FYP report is checked by my supervisor.

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Designation: Lecturer

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Project Report

Your BPO Partner

APPROVAL

PROJECT SUPERVISOR

Comments: _____

Name: Hasan Noor

Date: 15-07-2022

Signature: _____

PROJECT MANAGER

Comments: _____

Date: _____

Signature: _____

HEAD OF THE DEPARTMENT

Comments: _____

Date: _____

Signature: _____

Dedication

This work is dedicated to our respected supervisor, Sir Hasan, who has been a constant source of support and encouragement during the challenges of project. We are truly thankful for having you. This work is also dedicated to our parents, who have always loved us unconditionally and whose good examples have taught us to work hard for the things that we aspire to achieve.

Acknowledgements

We are really thankful to my supervisor for all the support that you have extended to me during project. We deeply appreciate how you have been continuously encouraging and guiding us in the last Six months, and also how you have always been so friendly and supportive of all of our efforts and struggles. Working under your supervision has been very enjoyable and we have learned and grown a lot. Thank you!

Executive Summary

Outsourcing has three sorts. First, information technology outsourcing (ITO) refers to outsourcing IT services to an external entity. Business process outsourcing (BPO) includes contracting some business processes and duties to a third-party service provider. Knowledge process outsourcing (KPO) outsources fundamental information-related business activities to third parties and needs significant analytical and technical capabilities. This study analyses the market for engineering services outsourcing (ESO) under the KPO category and the following Business Process Outsourcing (BPO) segments in the occupied Palestinian territories: contact center services; finance, accounting, and administrative (FAA) services; and human resource (HR) services (opt). This market system research doesn't include ITO software programming outsourcing. As the total number of unemployed Palestinians surged by more than 25% in 2014 to 338,300, developing job possibilities for the youth is crucial, with greater unemployment rates among university-educated youth.

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Chapter 1

Introduction

Chapter 1: Introduction

BPO is an acronym that stands for business process outsourcing. Put simply, it is the platform of hiring another company or individual to perform a process that a business company needs to operate. In other words, a business company is using a third party to handle non-primary business activities for their company. Companies choose to outsource when they know that another, more specialized company can handle a business task better than they can in-house. In this regards we will the (BPO) Provider Website works as platform and serve the leading companies with our outsourcing services. The idea is to fulfill their business needs remotely. We will not focused only customers but also create the jobs opportunities.

1.1. Background

As businesses are created, many choose to establish and manage their business processes in-house, especially in the beginning. However, as the business grows and thrives, managers and business decision-makers are faced with the decisions of how to grow the business and move forward most productively. At this point businesses need to ask themselves if it makes better sense to turn over non-core functions (e.g. data entry, EDI, rebate processing, third party billing, check writing and check printing, barcode labels...etc.) to a business process outsourcing company. To help guide your business through this thought-process, we've included the top five reasons to choose BPO for your business, here for easy reference.

1.2. Motivations and Challenges

Huge reduction in printing, dispatch costs.

- Seamless process that is fully integrated ensuring better quality of service to customers.
- Cost reductions by automation of upload processes from clients; automatic routing of documents to operators using OCR.
- Documents as well as the status of process is accessible quickly and from anywhere to BPO management as well as customers.
- Security of documents as they are stored in digital form.
- Enriched experience for users as they can search for documents and process them online.

1.3. Goals and Objectives

As part of BPO, documents need to be managed between the outsourcing company and the offshore company.

- Multiple clients need to be managed by the BPO Company.
- Security of the documents has to be ensured so that there is no unauthorized access of the documents to other organizations.

- Quick turnaround times have to be managed.
- Appropriate process flow of the documents has to be present in the system to check the status of the documents at any point of time.

1.4. Literature Review/Existing Solutions

We refers to the favorable or unfavorable of the job environment for public. The people and environment have changed, increased attention needs to be given to improving the BPO. Edwin B. Flippo in his book, "Personnel Management" explained the significance of BPO. As per him, 'A PBO program is a catch hall term that includes any improvement in organizational culture that advances the dignity and growth of employees.

1.5. Gap Analysis

American businesses choose to outsource for many reasons. Some people believe that businesses are only after the tax break associated with outsourcing jobs, or "shipping jobs overseas" as some political ads claim.

In addition, businesses cite many other reasons to engage in outsourcing:

- **To decrease costs:** Outsourcing cuts down on costs for in-house labor, particularly for staffing and training, and for the work space to accommodate local employees.
- **To concentrate on key functions:** Outsourcing allows businesses to hone in on their main offerings instead of company functions that aren't directly tied to their core processes.
- **To achieve better results in noncore functions:** Outsourcing companies specialize in what are considered noncore functions of other businesses, delivering world-class capabilities for its clients
- **To expand their global presence:** Some outsourcing companies can serve customers in multiple languages, around the clock, thus relieving the local company of the responsibility.
- **To enable flexibility:** Companies that outsource their noncritical functions can act more quickly and more efficiently when managing the risks associated with introducing new products or services
- **To improve speed and efficiency:** Companies that outsource processes are opting to let specialists handle those tasks, thus saving time, improving accuracy, and increasing their capacity

1.6. Proposed Solution

Business Process Outsourcing (BPO) Provider Website is a concept of making peoples life easier. We help businesses maximize their potential by providing cost-effective, scale-able workforce

solutions built on highly-skilled staff, modern fully-equipped workspace and we custom-built technology to deliver a seamlessly unified global workforce. The primary goal of this is to cut costs, free up time, and give them right solution for their problems.

We will be the right platform where they can provide their service and earn for living. Our web based application will be fully functional customers can be hire services and make a deal according to their needs.

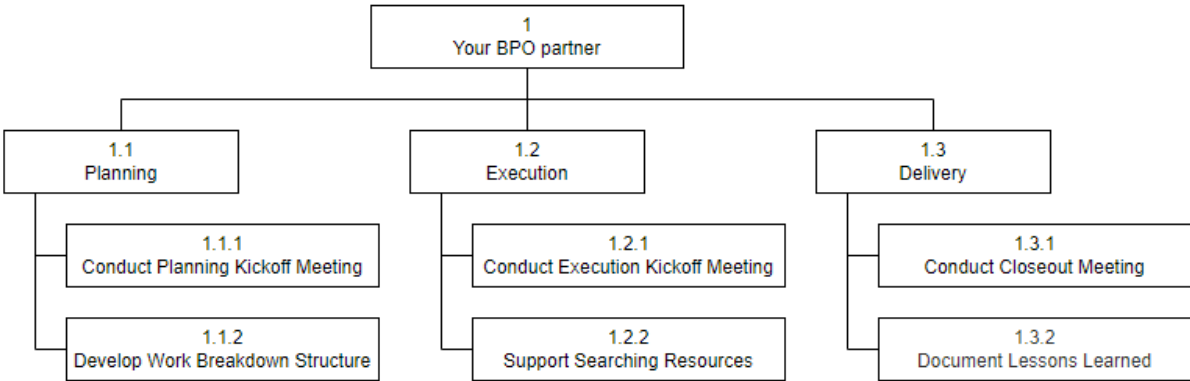
1.7. Project Plan

Once we examine that the project is feasible, I undertake project planning. The table below describes how we planned my project.

Table Project plan

	Task name	Duration	Start	Finish
1	Planning	3 Week	12/08/2021	02/09/2021
2	Design	6 Week	02/09/2021	22/10/2020
3	Coding	8 Week	22/10/2021	18/12/2021
4	Testing	5 Week	18/12/2021	28/01/2022
5	Delivery	2 Week	28/01/2022	14/02/2022

1.7.1. Work Breakdown Structure



1.7.2. Roles & Responsibility Matrix

Major roles of HR department in any BPO can be classified into

- **Sourcing**
Consultants employees, referrals, walk in, job fair etc.
- **Training**
Process specific training such as organization training
- **Retention**

1.7.3. Gantt Chart

Scheduling the project tasks is an important project planning activity. It involves deciding which tasks would be taken up when. In order to schedule the project activities, a software project manager needs to do the following this rules.

Week	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22
Planning	■	■	■																			
Design			■	■	■	■	■	■	■													
Coding									■	■	■	■	■	■	■	■	■					
Testing																	■	■	■	■	■	
Delivery																					■	■

Chapter 2

Software Requirement Specifications

Chapter 2: Software Requirement Specifications

2.1. Introduction

Business Process Outsourcing (BPO) is a form of outsourcing where one organization delegates one or more business processes to another company. The business functions that are most commonly outsourced are customer support, back-office, payroll, HR activities, data entry services, market research, etc. Moreover, the concept of BPO has been evolving. Nowadays, BPO services also include domains that require specialized skills such as social media analytics, software development, search engine optimization, and so on. These areas are also known as Knowledge Process Outsourcing (KPO). From promising startups to Fortune 500 companies, organizations of all sizes outsource processes, and the demand grows as innovative services are introduced in the BPO services that lead to competitive advantage.

2.1.1. Intended Audience and Reading Suggestions

This is the details documentation for the project including the introduction and propose of the project describe the scope of the project. This document can be read by the developers and project managers. We will suggest to reading the document chapter wise.

2.1.2. Product Scope

As part of BPO, Services need to be managed between the outsourcing company and the offshore company. Multiple clients need to be managed by the BPO Company. Quick turnaround times have to be managed.

2.1.3. References

Researched paper by www.vidyarthiplus.com the link is given below

<https://www.vidyarthiplus.com/vp/attachment.php?aid=24341>

<https://newyorkessays.com/essay-bpo-management-system-problem-statement>

2.2. Overall Description

2.2.1. Product Perspective

There are so many call centers providing the BPO services but there is not a platform where any new business startup can find reliable and trusted services provider to fulfill their requirements.

2.2.2. Product Functions

Search for client/job

BPO organization searches the outsourcing job.

Negotiate the project

Once job has been found then negotiate with the client for doing that project.

Upload input data

After finalizing the negotiation client uploads the input to the BPO organization through FTP

Perform required conversion

BPO organization starts the required conversion process.

Quality Check

This use case is used to ensure that the quality of the product. Randomly audits the outcome of the project to ensure the quality. This process is continued until we achieve the required quality

Shipment after QC

Upload the output to the client.

Payment

Get the payment for the project from client

2.2.3. Operating Environment

HTML - Markup Language used for creating web pages.

- J2EE – Java 2 Enterprise Edition is a programming platform java platform for Developing and running distributed java applications.
- HTTP - Hyper Text Transfer Protocol.
- TCP/IP – Transmission Control Protocol/Internet Protocol is the communication protocol used to connect hosts on the Internet.

2.2.4. Design and Implementation Constraints

- The BPO require a computer (FTP) to submit their information.
- Although the security is given high importance, there is always a chance of intrusion in the web world which requires constant monitoring.
- The user has to be careful while submitting the information. Much care is required.

2.2.5. User Documentation

There will be 2 user manuals one for clients and other is for freelancers including videos and guide lines.

2.2.6. Assumptions and Dependencies

- The organization and client must have basic knowledge of computers and

English Language.

- Provide privacy and security for the documents and client information

2.3. External Interface Requirements

2.3.1. User Interfaces

Front End Client - The exporter online interface is built using JSP and HTML.

- Web Server – Apache Tomcat Server (Oracle Corporation)
- Back End - Oracle 11g database

2.3.2. Hardware Interfaces

The BPO system's server is directly connected to the client systems via ftp. The client systems have access to the database in the server.

2.3.3. Software Interfaces

- Web based Application
- Java programming computer application

2.3.4. Communications Interfaces

- SQL Databases
- Java ide
- Webservers

2.4. System Features

- This is a complete web based solution, which enables the BPO Organization's clients to store documents automatically on the server.
- Clients can scan documents from multiple locations and an automatic up loader module that can be scheduled automatically uploads the documents.
- Documents uploaded are automatically routed to specific users based on the rules definable by the admin user.
- Documents uploaded are automatically routed to specific users based on the rules definable by the admin user.

- Data Entry and Quality check users can automatically download the documents in

a web- based interface to do their respective operations on the documents uploaded.

2.5. Functional Requirements

2.5.1. System login

- The system must allow users to log into their account by entering their email and password.
- The system must allow users to log in with their Google accounts.
- The system must allow users to reset their password by clicking on "I forgot my password" and receiving a link to their verified email address.

2.5.2. Business account

Here business owner or client can sign up for his account to get access the services on the BPO system and have a complete dashboard to manage their projects or service with the freelancers service provider.

2.5.3. Service provider account

Service provider will have a account with workspace dashboard to mange their contracts or order with their clients. They will have the payment and earning options with account

2.5.4. Authentication

- Authentication of user whenever he/she logs into the system.
- System shutdown in case of a cyber attack.
- A Verification email is sent to user whenever he/she registers for the first time on some software system.

2.6. Non-Functional Requirements

2.6.1. Safety Requirements

- **Strategy** Be clear on your strategic choices to improve health & safety activity.

- **Segment Work** Group work into segments, e.g. strategy & innovation, core business, transaction processes, independent verifications
- **Resourcing** Evaluate resourcing options based on capacity and capability now and in the future. Be clear on your selection criteria, e.g., share values, capacity and capability fit
- **Measure Success** Be clear on how you will measure and know your resourcing choices are successful and celebrate success!

2.6.2. Security Requirements

- Choose web host carefully.
- Create strong admin passwords.
- Use multi-factor authentication. ...
- Make sure that web software is up to date.
- Use an SSL Certificate.

2.6.3. System flexibility

- **Technical Feasibility** In technical feasibility study, one has to test whether the proposed system can be developed using existing technology or not.
- **Economic Feasibility** As part of this, the costs and benefits associated with the proposed system are to be compared and the project is economically feasible only if benefits outweigh costs.
- **Operational Feasibility** This test of feasibility checks if the system works with least difficulties when it is developed and installed. The technical staff has sufficient knowledge of the tools being used and the users need just to know how to access and run the programs in the Apache Web Sever. Hence it is concluded that the system is operationally feasible.

Chapter 3

Use Case Analysis

Chapter 3: System Analysis

- BPO has been designed with the base product to suit the BPO vertical requirements.
- This is a complete web based solution, which enables the BPO Organization's clients to store documents automatically on the server.
- Clients can scan documents from multiple locations and an automatic uploader module that can be scheduled automatically uploads the documents.
- Documents uploaded are automatically routed to specific users based on the rules definable by the admin user.
- Data Entry and Quality check users can automatically download the documents in a web- based interface to do their respective operations on the documents uploaded.

3.1. Use Case Model

The BPO management system use cases are:

Search for client/job

- Negotiate the project
- Upload input data
- Perform required conversion
- Quality Check

3.2. ACTORS

Actors are as follows:

- i) BPO Organization ii) Client

ACTORS DOCUMENTATION:

i) BPO Organization

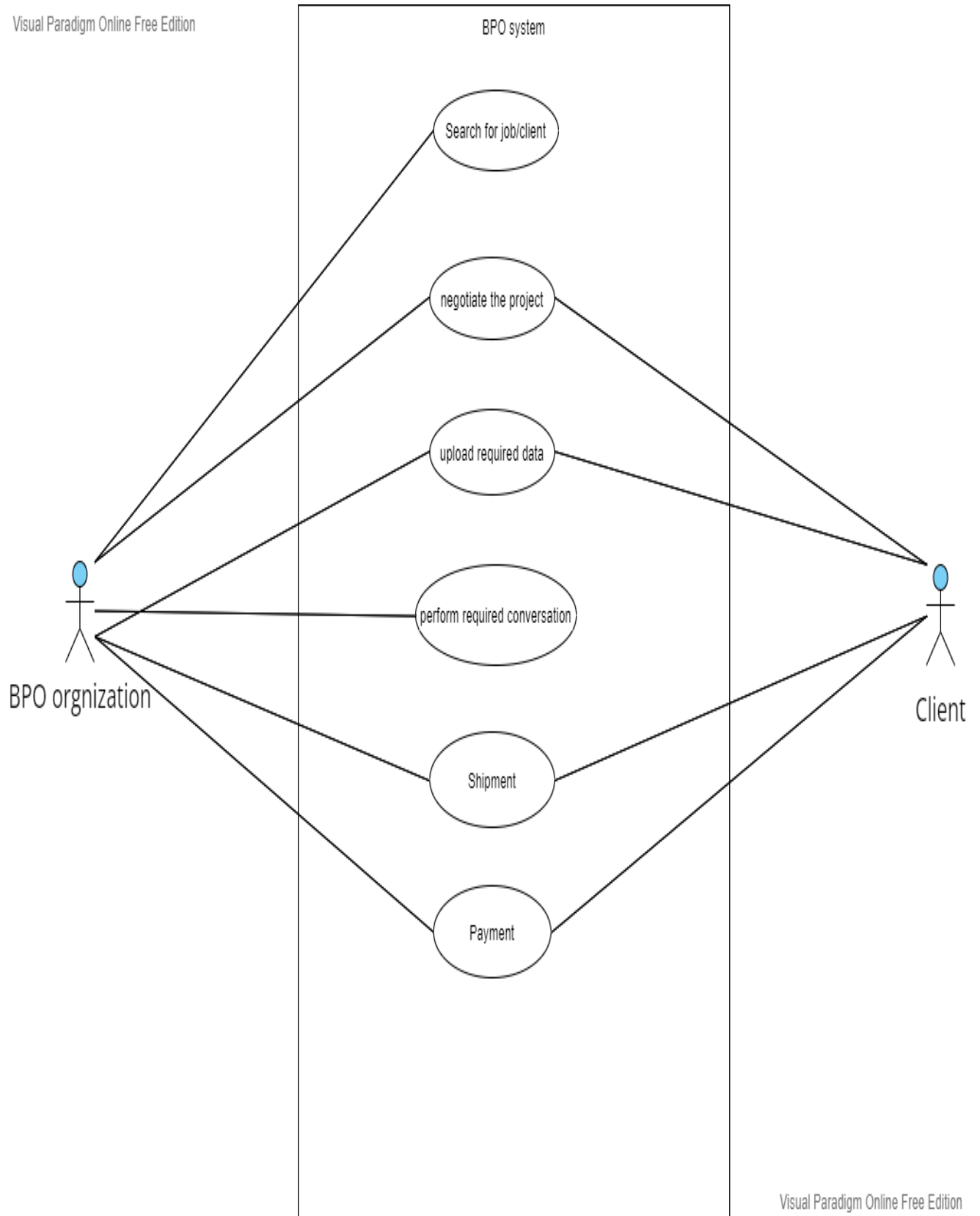
- Searching the client in accounting package
- Downloads the input document
- Views images and enters data
- Checks the quality or images, output of operators
- Uploads the output to the clients

ii) Client

Clients can scan documents from multiple locations and an automatic uploader module that can be scheduled automatically uploads the documents

3.3. Use Case Descriptions

- i) **USE-CASE NAME: Search for client/job**
BPO organization searches the outsourcing job.
- ii) **USE-CASE NAME: Negotiate the project**
Once job has been found then negotiate with the client for doing that project.
- iii) **USE-CASE NAME: Upload input data**
After finalizing the negotiation client uploads the input to the BPO organization through FTP
- iv) **USE-CASE NAME: Perform required conversion**
BPO organization starts the required conversion process.
- v) **USE-CASE NAME: Quality Check**
This usecase is used to ensure that the quality of the product. Randomly audits the outcome of the project to ensure the quality. This process is continued until we achieve the required quality
- vi) **USE-CASE NAME: Shipment After QC**
upload the output to the client.
- vii) **USE-CASE NAME: Payment**
Get the payment for the project from client



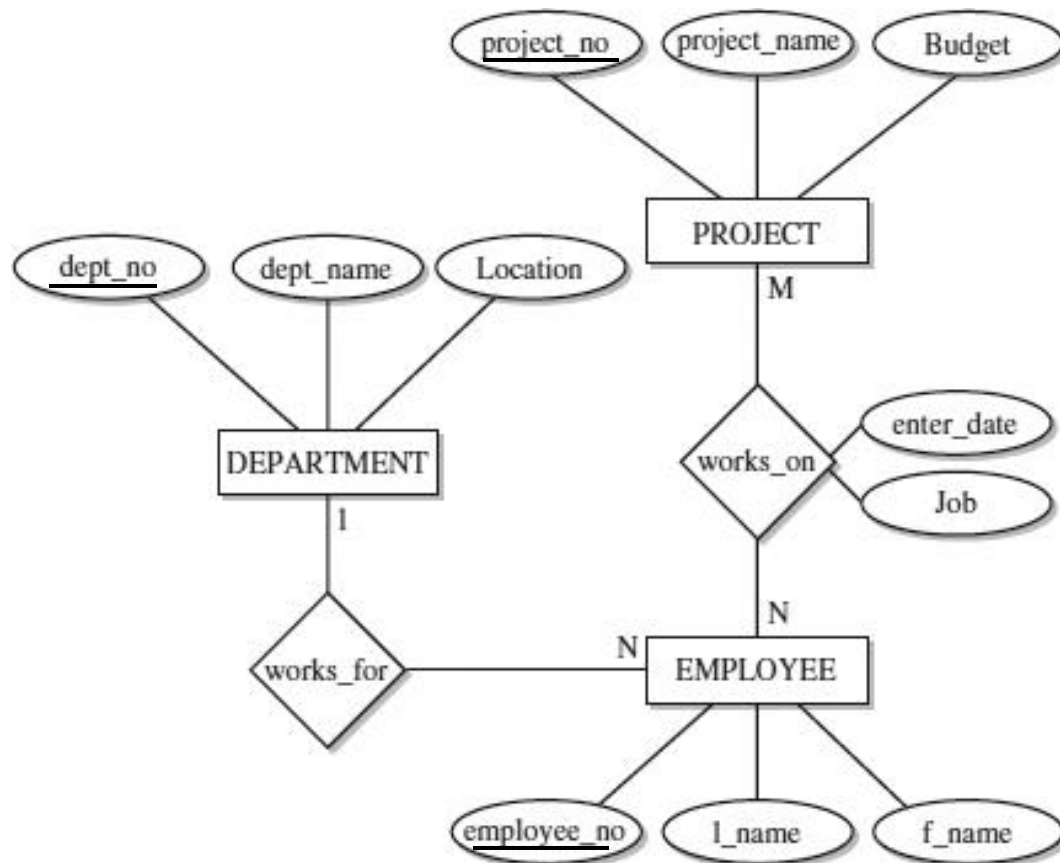
Chapter 4

System Design

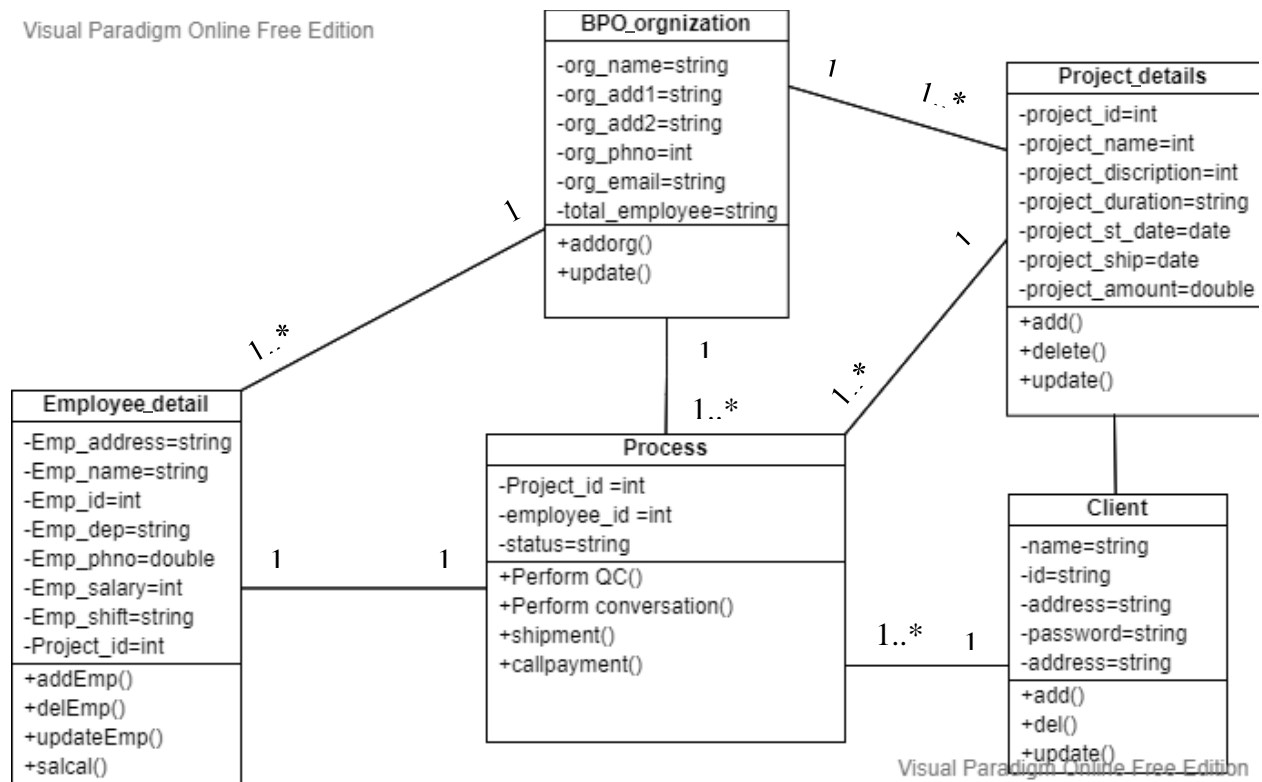
Chapter 4: System Design

- BPO has been designed with the base product to suit the BPO vertical requirements.
- This is a complete web based solution, which enables the BPO Organization's clients to store documents automatically on the server.
- Clients can scan documents from multiple locations and an automatic uploader module that can be scheduled automatically uploads the documents.
- Documents uploaded are automatically routed to specific users based on the rules definable by the admin user.
- Data Entry and Quality check users can automatically download the documents in a web- based interface to do their respective operations on the documents uploaded.

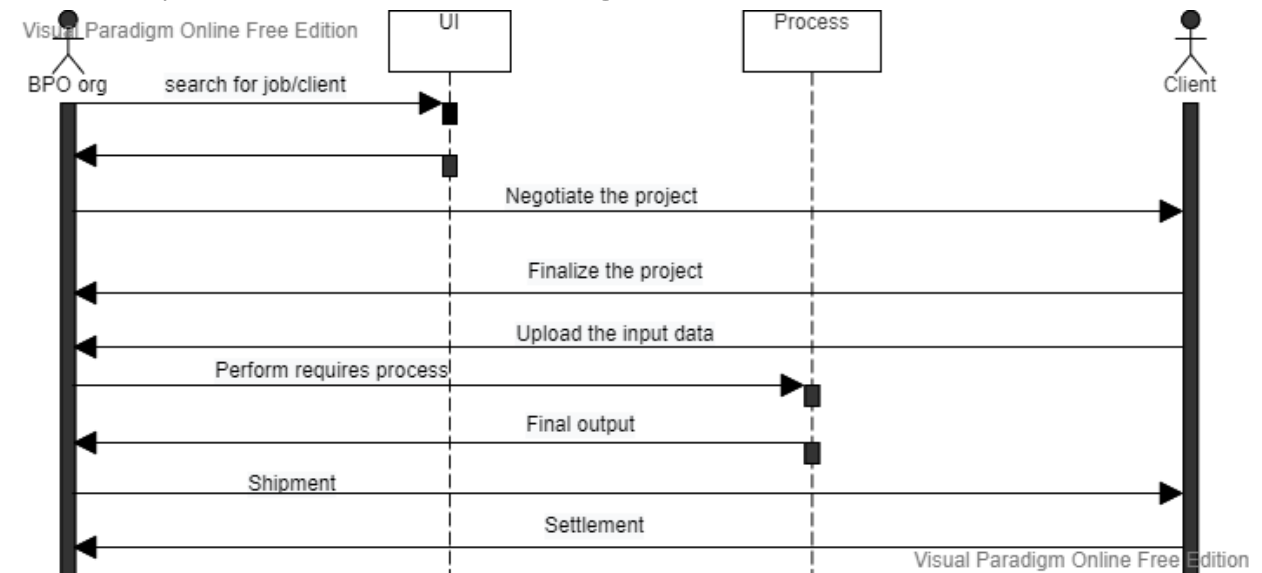
4.1. Entity Relationship Diagram with data dictionary



4.2. Class Diagram



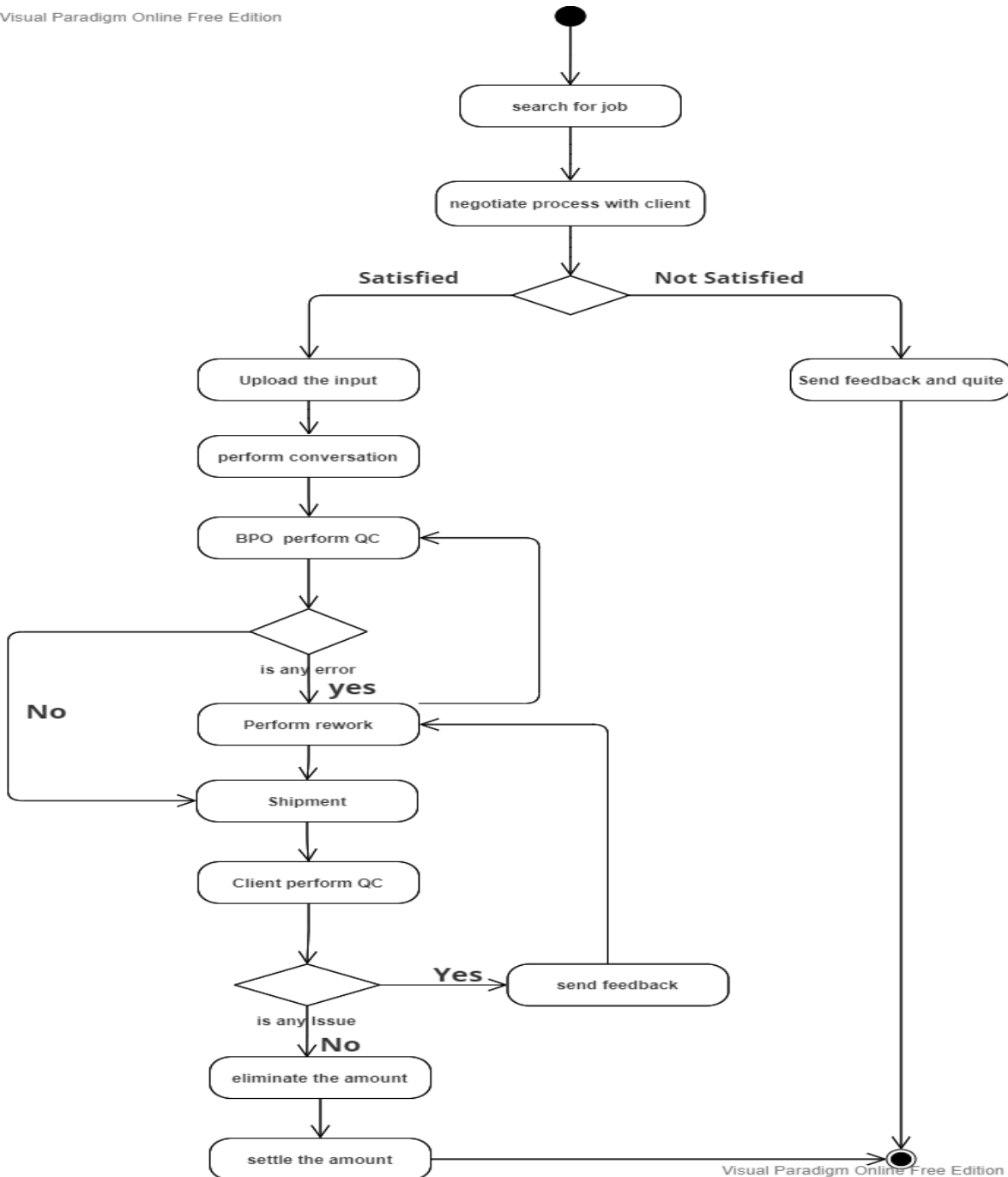
4.3. Sequence / Collaboration Diagram



4.4. Activity Diagram

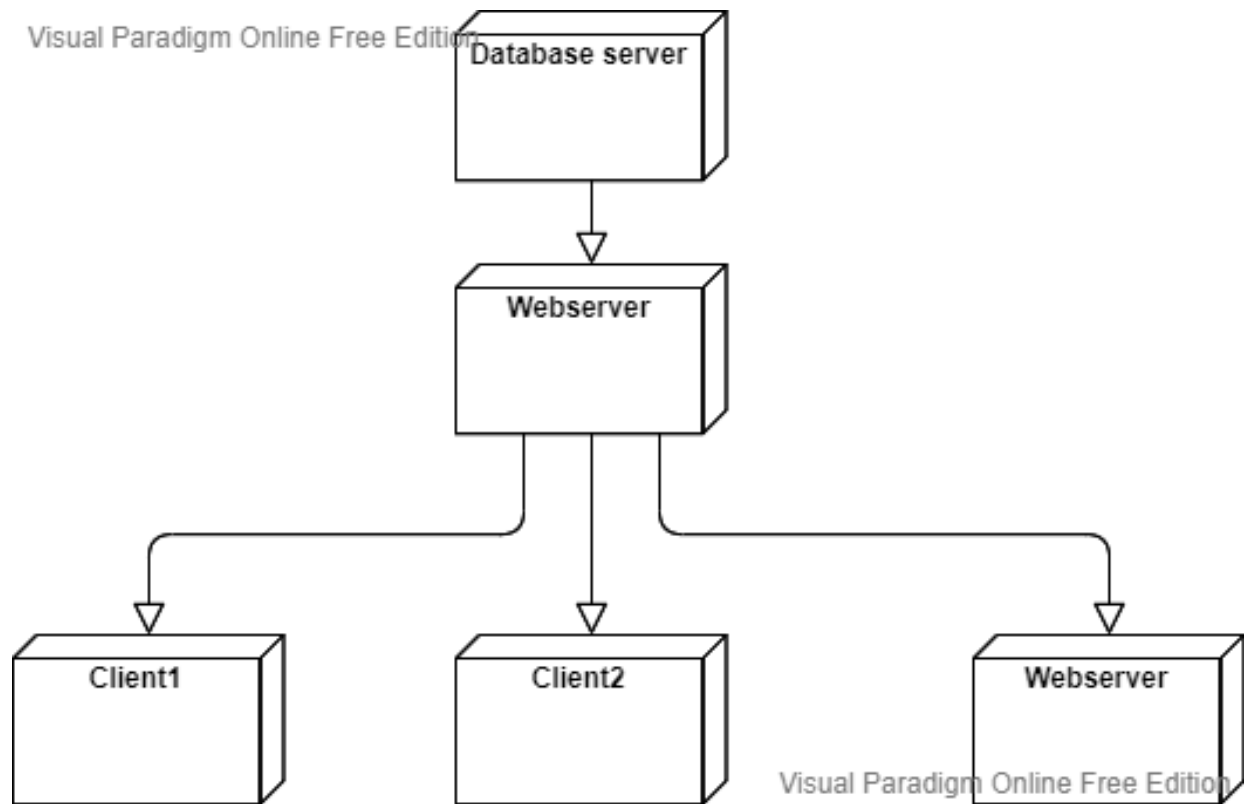
Activity diagrams are graphical representations of workflows of stepwise activities and actions with support for choice, iteration and concurrency. In the Unified Modeling Language, activity diagrams can be used to describe the business and operational step-bystep workflows of components in a system. An activity diagram shows the overall flow of control. An activity is shown as an rounded box containing the name of the operation. This activity diagram describes the behavior of the system.

Visual Paradigm Online Free Edition



Visual Paradigm Online Free Edition

4.5. Deployment Diagram



Chapter 5

Implementation

Chapter 5: Implementation

5.1. Components, Libraries, Web Services and stubs

- We use JDeveloper to perform the following tasks:
- Configure JDeveloper to develop and run web services.
- Create web service clients by performing one or more of the following tasks:
 - Find web services in a Universal Description, Discovery and Integration (UDDI) registry
 - Create a client and proxy classes to access an existing web service to incorporate it into an application
- Create web services by performing one or more of the following tasks:
 - Create web services from the underlying Java implementation (bottom up)
 - Create Simple Object Access Protocol (SOAP) web services from the WSDL (top-down)
- Manage WSDL files for SOAP services
- Secure web services using policies
- Test and debug web services
- Deploy web services to the Integrated WebLogic Server or Oracle WebLogic Server
- Monitor and analyze deploy web services

5.2. Deployment Environment

Software deployment refers to the process of running an application on a server or device. Software deployment refers to the process of making the application work on a target device, whether it be a test server, production environment or a user's computer or mobile device.

5.3. Tools and Techniques

Techniques or technology

- HTML
- JSP
- Javascript
- Java 1.6

TOOLS TO BE USED

- Online visual paradigm

5.4. Best Practices / Coding Standards

Good coding helps to prevent errors, control complexity and improve the maintainability of applications.

- Assigning names to all variables, functions, and methods to make the code easier to read, understand, and maintain.
- Use commonly spoken language for the names. Descriptive text, typically in whatever the native language of the developer, should be used.
- The shorter and clearer your names or commands are, the better off you will be. Too much additional text can result in confusion and long, complex code.

Chapter 6

Testing and Evaluation

Chapter 6: Testing and Evaluation

System testing is the process of checking whether the developed system is working according to the objective and requirement. All testing is to be conducted in accordance to the rest conditions specified earlier. This will ensure that the test coverage meets the requirements and that test is done in a systematic manner.

The main purpose of testing an information system is to find the errors and correct them. The scope of systems testing should include both manual and computerized operations.

6.1. Use Case Testing

4. Verify that all the specified fields are present on the registration page.
5. Verify that the required/mandatory fields are marked with * against the field.
6. Verify that for better user interface dropdowns, radio buttons and checkboxes, etc fields are displayed wherever possible instead of just textboxes
7. Verify the page has both submit and cancel/reset buttons at the end.
8. Verify that clicking submits button after entering all the required fields, submits the data to the server.
9. Verify that clicking cancels/reset button after entering all the required fields, cancels the submit request, and reset all the fields.
10. Verify that whenever possible validation should take place at client side
11. Verify that not filling the mandatory fields and clicking the submit button will lead to validation error.
12. Verify that not filling the optional fields and clicking the submit button will still send data to the server without any validation error.
13. Check the upper limit of the textboxes.
14. Check validation on the date and email fields (only valid dates and valid email Ids should be allowed).
15. Check validation on numeric fields by entering alphabets and special characters.

16. Verify that leading and trailing spaces are trimmed.
17. Verify that entering blank spaces on mandatory fields leads to validation error.
18. Verify that after making a request to the server and then sending the same request again with the same unique key will lead to server-side validation error.

6.1. Equivalence partitioning

Equivalence partitioning is also known as “Equivalence Class Partitioning”. In this method, the input domain data is divided into different equivalence data classes – which are generally termed as ‘Valid’ and ‘Invalid’. The inputs to the software or system are divided into groups that are expected to exhibit similar behavior. Thus, it reduces the number of test cases to a finite list of testable test cases covering maximum possibilities.

6.2. Boundary value analysis

BVA is another Black Box Test Design Technique, which is used to find the errors at boundaries of input domain (tests the behavior of a program at the input boundaries) rather than finding those errors in the center of input. So, the basic idea in boundary value testing is to select input variable values at their: minimum, just above the minimum, just below the minimum, a nominal value, just below the maximum, maximum and just above the maximum. That is, for each range, there are two boundaries, the lower boundary (start of the range) and the upper boundary (end of the range) and the boundaries are the beginning and end of each valid partition. We should design test cases which exercise the program functionality at the boundaries, and with values just inside and outside the boundaries. Boundary value analysis is also a part of stress and negative testing.

6.3. Data flow testing

Data Flow Testing is a type of structural testing. It is a method that is used to find the test paths of a program according to the locations of definitions and uses of variables in the program. It has nothing to do with data flow diagrams.

It is concerned with:

1. Statements where variables receive values,
2. Statements where these values are used or referenced.

6.4. Unit testing

The unit testing is performed to test the validity of the individual units. This is done in the coding phase with the interactive testing. Thus it itself constitutes a majority of functionality test for each logical unit.

6.5. Integration testing

When all the development of all the units or modules is completed and integrity test phase is started. In this phase the interface between the modules are tested. This phase basically verifies whether inter-modules exchange of information and events are as per required system behavior.

6.6. Performance testing

Performance testing of e-commerce applications performs overall testing of the software, determining if it is functioning properly or if the loading time taken by the pages is perfect. Other than that, it also checks about the billing, shopping guide part as well.

6.7. Stress Testing

Load testing is an effective way to measure your website performance against various parameters under huge user traffic conditions. Load testing is done by simulating a high number of virtual users performing different actions on your website. User actions are guided by creating simple

user scripts in the load testing environment. Load testing gives useful information about memory utilization, CPU utilization, disk I/O, load balancers, page issues, etc.

An e-commerce website has more chances of going down under high traffic due to the nature of browsing and transactions happen on it. And that's a negative impact on revenue as well as credibility. For example, if you are running an end-of-season sale and don't test your website for the expected number of users during the sale, your users may experience downtime, slow loading, and failed transactions. This can totally ruin your sales goal.

E-store require load testing to make sure that users on your website experience smooth experience in high traffic scenarios and able to make purchases without any trouble. Load testing for an e-commerce website is equivalent to business risk mitigation. It identifies and resolves all bottleneck issues that can be a blocker for sales during peak traffic times.

Chapter 7

Summary, Conclusion and Future Enhancement

Chapter 7: Summary, Conclusion & Future Enhancements

7.1. Project Summary

Business Process Outsourcing (BPO) Provider Website is a concept of making peoples life easier. We help businesses maximize their potential by providing cost-effective, scale-able workforce solutions built on highly-skilled staff, modern fully-equipped workspace.

7.2. Achievements and Improvements

There are so many call centers providing the BPO services but there is no platform where any new business startup can find reliable and trusted services provider to fulfill their requirements. As part of BPO, Services need to be managed between the outsourcing company and the offshore company. Multiple clients need to be managed by the BPO Company. Quick turnaround times have to be managed.

7.3. Critical Review

There are three forms of knowledge process outsourcing (KPO), which involves contracting with third parties to conduct essential information-related business operations. Business Process Outsourcing (BPO) includes engineering services outsourcing (ESO), contact center services, financial accounting and administration (FAA), and human resources (HR) (opt). This market estimate excludes ITO outsourcing, which typically incorporates software development. More than 25% more Palestinians were unemployed in 2014 than in 2013, making it vital to create opportunities for the youth, especially college graduates.

7.4. Lessons Learnt

One of the most important things to capture upfront for any web project is a defined feature list. There are many ways to generate this list including online research, user surveys, brainstorming, workshops, stakeholder interviews, user interviews, etc.

In my experience though we often end up with a very long list of features for the sake of having features. Clients often mistake having a lot of features and functionality on their site with having a great website.

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