DBI CAPITAL

Turbo International E-Commerce Requirements

High-Level Requirements

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Provide business background and high-level requirements of E-commerce website and application server.

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Summary

The goal of the project is to (1) build a new e-commerce website and (2) build an application server that manages product metadata. The e-commerce server will provide standard features to Company's customers to include product search and shopping cart/check out. The application server will interface with the e-commerce website via standard web services and Company users via a standard web browser.

Turbo International Business Overview

Turbo International ("Company") is a light manufacturer and wholesale distributor of aftermarket turbo chargers. The turbo chargers are used in variety of vehicles to include personal, commercial and agriculture. The Company's customers are comprised of businesses located throughout the world but focused in Europe and the Americas.

The Company's sales are from a combination of outbound sales via an in-house sales team and inbound sales via the e-commerce website.

Current Infrastructure

The current infrastructure consists of a custom-built e-commerce website and an on-premise ERP server. The two systems do not communicate, and any data synchronization (e.g. pricing, new products, etc.) is performed manually. All orders from the e-commerce website are entered manually into the ERP system, and the e-commerce website does not process any payments. Payments are handled manually via the on-premise ERP server.

Existing e-commerce website

The current E-commerce website (www.turbointernational.com) was built in ~2002 and is written in Visual Basic, IIS and Microsoft SQL Server database. The two main deficiencies of the current solution are (1) usability and (2) product metadata.

Usability

Based on the year that the website was built many of the enhancements of web 2.0 have not been incorporated. So, the site feels very "dated" and provides a very clunky user interface. The website was built from scratch and does not incorporate many standard user-interface practices that are common in e-commerce sites today. The website does not follow any MVC architecture which hampers future development.

Product Metadata

Due to the nature of the aftermarket turbo charger industry it is very important for customers to be able to effectively search products by available attributes. The existing database that stores the product attributes is the MS SQL database that also supports the current e-commerce site. This database was poorly constructed causing many data conflicts and redundancies.

Proposed Infrastructure

The proposed infrastructure is divided into two logical entities: (1) e-commerce website and (2) application server for product metadata. This existing ERP system (not shown in the diagram below) will not be altered and will not integrate with either the e-commerce website or the application server. The proposed infrastructure is meant to convey the concept and to provide guidance. It is not intended to be a complete list of all architectural entities required to fulfill the business objectives.

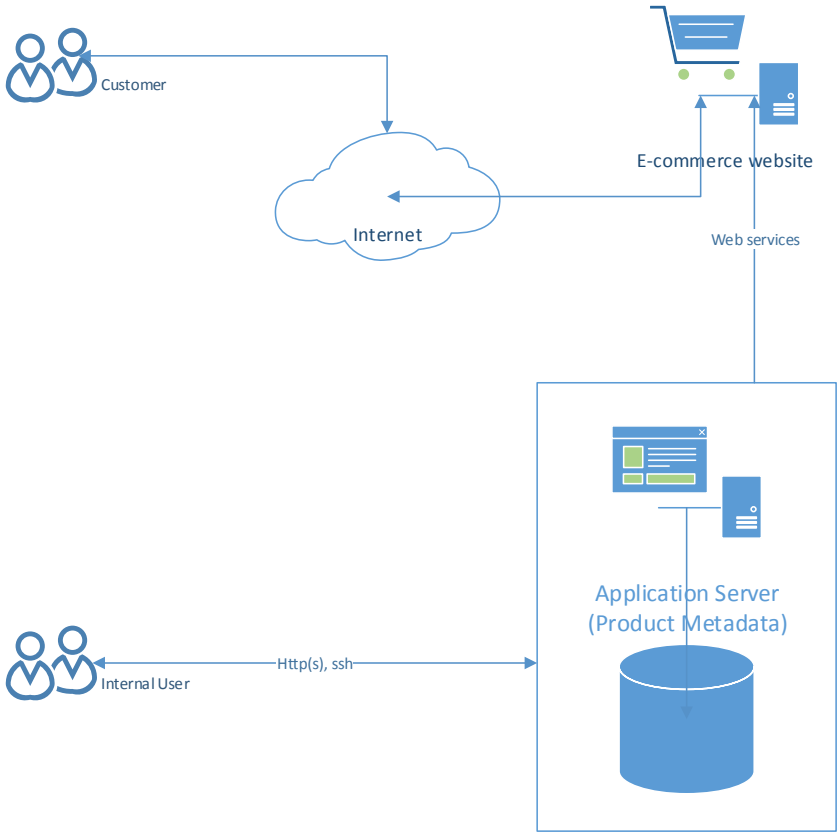

Figure 1 – High Level Architecture Overview

E-commerce Website

The website should be built on top of an existing e-commerce framework and not developed from scratch. Standard e-commerce functionality should be supported with some exceptions that will be listed below. The goal is to provide a modern user interface with full-featured product search capability customized to the Company's needs. The E-commerce website will not be integrated with the Company's ERP system. So, customer's accounting info, inventory available quantity, fulfillment status, etc. will not be reflected or updated in the website. Future development outside of the scope of this project may upgrade the ERP system and provide integrated support. But to include any ERP modifications in this scope of work would extend the development longer than desired.

Current Metrics

Below are the current metrics based on Google Analytics. 100% annual web growth is expected for the next three years. Since the website is a B-to-B site the total quantity of interactions is relatively small when compared to a B-to-C site. Even with expected growth over the next several years the website will always be very manageable from a "transactions per second" metric.

Current website metrics:

- Monthly visits: 12,000
- Monthly page views: 62,000
- Registered Users: 1,000
- Orders per day: 10

Functionality

- Product search
    - Contextual-based filters in left column that change based on product taxonomy
    - Sorting of results by columns
    - Site-wide Google-like search capability
- Price
    - Multiple price levels
    - Multiple currency support
    - Only visible when user is authenticated
- Shopping cart
    - Payment processing not required
    - Shipping configuration/integration not required
    - Cart contents persists between sessions
    - Check out as guest is not allowed
    - Tax or VAT calculation is not required
    - Product inventory QOH will not be integrated with e-commerce site
- Administrative portal access
    - Customer account management
    - Order management
    - Multiple user support with configurable security permissioning model
    - Product content management
- User account
    - Registration is closed
    - new users may create an account, but account must be authorized by administrator
    - Self-help user profile update and password reset
- Mobile commerce
    - Nice to have but not a requirement
- Style/Presentation
    - Multiple language support (e.g. English, French, etc.)
    - Customizable via skins or themes

- Promotions
    - Up-sells, Cross-sells and Related Products
- SEO
- Static Content
    - Contact Us
    - Company About Us
    - Ability to add other static pages
    - Header/Footer
- Product Comparison

Reporting

- Web metrics can be performed by Google Analytics

Technical

- Web service API for product meta data update

Wireframes

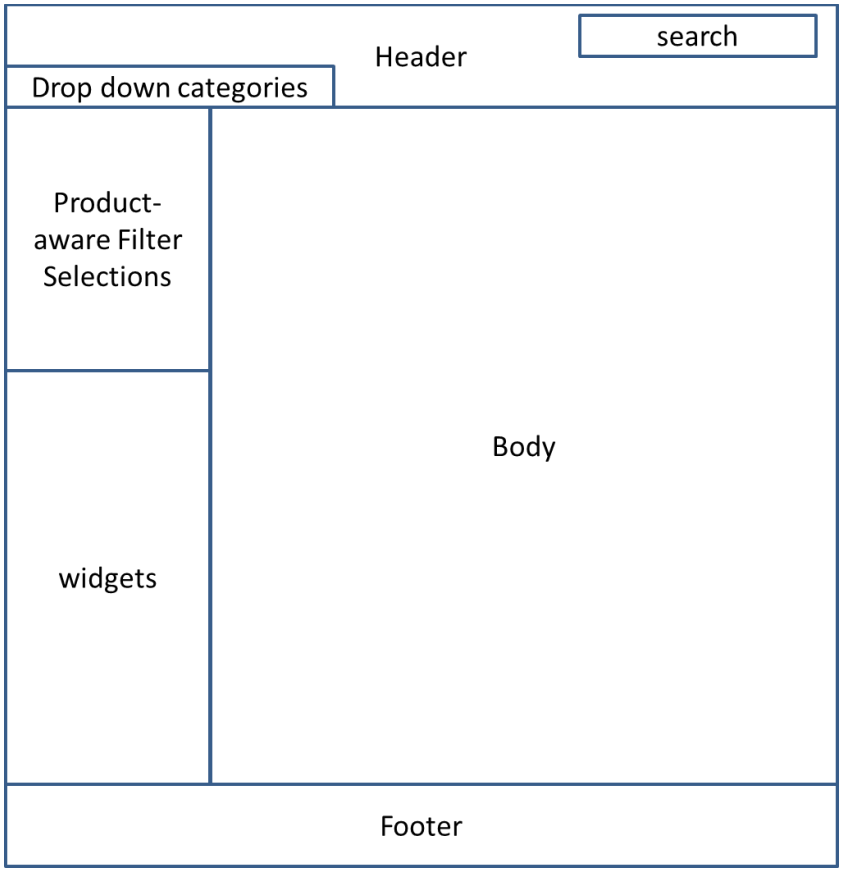

Figure 2 - Home Page

E-commerce Website Summary

Most of the desired features listed above are fairly standard features that can be found with many of the existing available e-commerce frameworks (e.g. Magento). The expected custom development will revolve around the (1) detail page layout for each product type and (2) product search/filter/sort capability.

Detail Page Layout by Product Type

Each type of product has different key attributes that need to be displayed in their respective detail layout. So, this will require customized product detail pages. There are about 15 different product types that will require this layout.

Product Search

Since the universe of available products types to sell is finite (and known prior to development) the attributes available to the user to search, filter and sort will be customized per product type. Some of this search functionality may be able to be implemented using the native functions of the e-commerce site. For example, some sites allow defining filterable attributes for different product types as a configuration instead of customization.

Application Server for Product Metadata

The application server is comprised of a relational database, business logic server, and web server. The primary goal is to be the central repository of the product metadata and to provide access to this data to authorized services/users.

Application Server Requirements

- Security model based on traditional hierarchal role/group model that controls permissioning
    - Manages access to resources controlled by the app server
    - User authentication
    - User access to objects/models
    - External Web service access
- CRUD functionality to relational database via web browser
- Administrative functions via web browser
- CRUD logging that maintains a record of all changes to product meta tables to include user, datetime, and content that was changed
- Some variation of a LAMP stack is preferred
    - Application business server logic should written using a modern, open source, well-known language (e.g. Java, Python, etc)
    - There are no specific requirements for the flavor of linux or web server…just that it is a commonly used version for ease of maintenance.
    - The relational database can be either MySQL or PostgreSQL
- The physical location of the application server and the e-commerce server does not need to be together
- The application server should be hosted in a cloud as the primary option (e.g. EC2). On-site location is possible but not desired.

- Communication between application server and external services/users should be encrypted either https or dedicated encryption protocol when possible
- The database will not contain any personal, medical, or banking records. There are no government or industry requirements that apply (e.g. HIPAA, PCI compliance).
- Data should be backed up ~once per day
- Disaster Recovery should store data "offsite" to allow for full recovery in case of complete failure of cloud hosting service. The "offsite" location could be another region of the same cloud hosting service.
    - For the scope of this document downtime of up to three days is acceptable for DR

Database – more detail

The database is the master location that stores all of the product attributes. These attributes periodically change and need to be updated by authorized personnel from the Company. The database schema has already been developed and will be provided with populated data.

Examples of attributes are:

- Manufacturer
- Photographs
- measurements

Web Services – more detail

Product metadata periodically changes (e.g. price, new parts, etc), and these changes need to propagate to the e-commerce site without having to enter the data twice (i.e. once in the product metadata database and another in the e-commerce site). The web services will interface with the API's in the e-commerce website to provide the desired updates. The specific web services are beyond the scope of this document as that will depend on the e-commerce solution that is implemented.

Web Browser Interface for Company Users – more detail

Company users will need to access the application server to perform various functions such as administration of the services and updating/maintaining the product metadata. The look of this website can be minimal and does not need to be highly styled since the primary users will be internal. Preferably the a MVC design is used in coordination with a framework to provide for rapid initial development and future development.