Sprint 1 – Personal Portfolio

Wenona Cramp-Church

Due Date: 21st September 2018

Tutor: Prakash Bhandari

Group Number: 92

Github: https://github.com/taylorbindon/IFB299.git

Table of Contents

Personal Portfolio

Artefact 1 – Justification for Selected Architecture Pattern

Artefact description

Software architecture patterns are used to design the top (system) level. Web-applications use multi-tier architecture (web server, application server and database), whilst client/server applications use two tier architecture (user interface/business logic and database). Our team has selected web-based architecture and will be using Python with the Django web framework. The server will send the files to the browser, then the browser executes the files and shows them (on a page) to the user. The user is then able to interact with the website (Stringfellow, 2018). This creates an efficient architecture pattern that supports future growth and future organisational requirements.

The reason our group selected a web-based application over a client/server application is for several reasons. Firstly, web-based architecture is accessed using a browser, whilst a client/server application is run locally and needs to be installed on a machine. For the current situation (a Car Rental Company), it is not reasonable that every potential customer must first download an application to browse and book vehicles online. This could in fact, deter customers. Therefore, it is more reasonable for customers to be able to access the site through a browser.

It is easier to test scripting errors in web-based applications. A client/server-based application lacks robustness, the server can get overloaded and fail (as the number of requests increases). This may result in low performance. To change the interface of a client/server app, the software must be upgraded. Different testing is performed. On a client/server application, tests performed may include [sourced from SoftwareTestingHelp, 2018]:

- User interface testing
- Manual support testing
- Functionality testing
- Compatibility testing & configuration testing
- Intersystem testing

On a web application, tests performed may include:

- User interface testing
- Functionality testing
- Security testing
- Browser compatibility testing
- Load/stress testing
- Interoperability testing/intersystem testing
- Storage and data volume testing

For a Car Rental Company (CRC), users' main aim is to book and hire vehicles. Staffs' main aim is to store data, develop reports and make recommendations. It is therefore more suitable to test: security, browser compatibility and functionality, rather than manual support testing and configuration. By using a web application, all users will have access to data and the most recent software.

According to Patient Account Services, a web-based system saves $30 000 - $100 000 per year on initial costs, and $2 000 – $6 000 per year in service fees. In a web-based system, third-party licenses are included. Using web-based software keeps clients up-to-date with current releases and backs up data. A client-server system requires more onsite set-up than a web-based system. In today's market, web-based systems provide the most value for money (Patient Account Services, 2018). Overall, our group has chosen the most appropriate architecture for CRC.

Please note this artefact has been committed to GitHub: Github Commit – taylorbindon/IFB299/Documents/Wenona - Justification for web-based architecture.docx

Contribution to the project/how it was used

The web-based architecture will form the basis for the Final Release. The selected architecture will influence the programming for the web page. Python will be used for the backend to display information, whilst CSS, JavaScript and HTML will be used to create the webpages. The system will be of high quality, exhibiting low coupling, high cohesion and good use of design patters across the entire system. The final product will be demonstrated to CRC to be used as a new data management system.

Screen capture of where it's used

Kirsten's assigned web page 'Employee Sign In' [see below] is the example of where web-based architecture was used for the assessment.
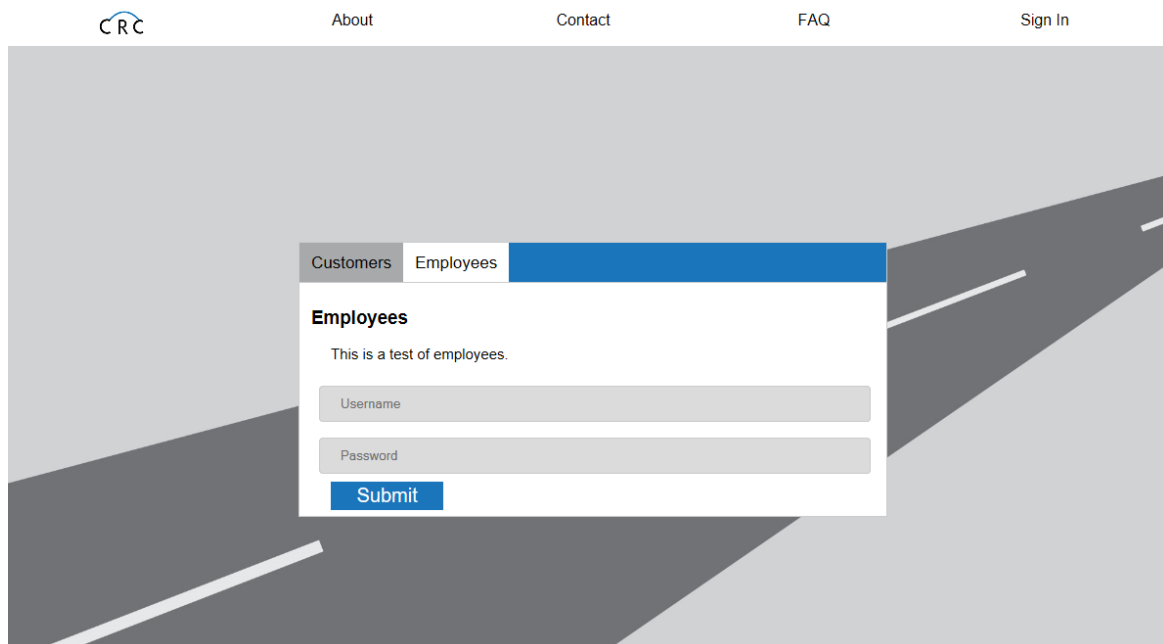
Artefact 2 – Annotations and Iterations for Customer Home Page

Artefact description
One member of the team (Bree) created mock-up graphical user interfaces (GUI's) using InDesign. In total, 10 mock-ups were created to simulate the following web pages: About, Contact, Customer Home, Customers, Employee Home, FAQ, Reports, Sign In, Stores, and Vehicles. This artefact will contain the UI annotations and HTML/CSS iterations for the Customer Home page. Please note: for the purposes of display, div style specifications such as height have been included in the initial iteration. In the final iteration, this will be included in the CSS (created by Kirsten), not HTML.
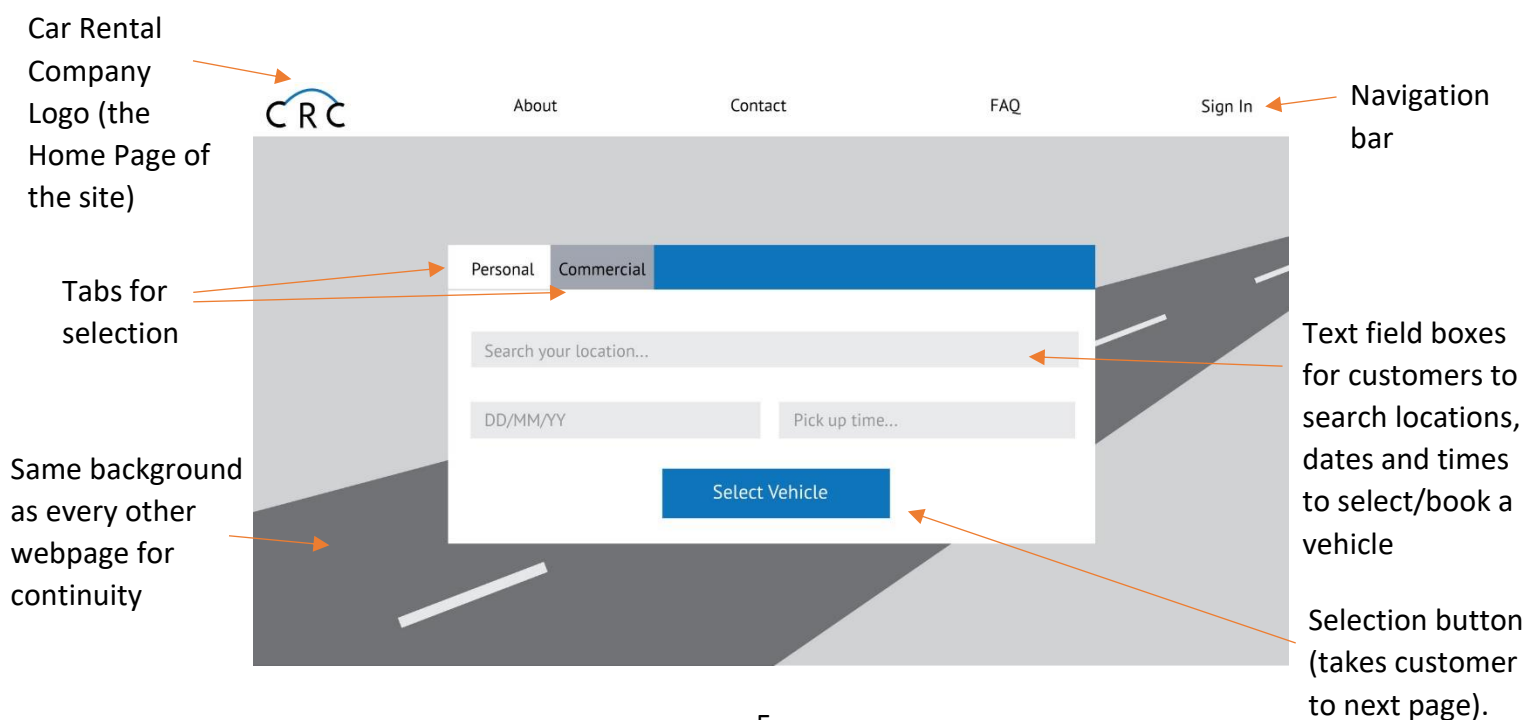
Contribution to the project/how it was used
The UI annotations were used when creating the HTML for each web page. Each member will create a HTML web page and test a webpage (different to the page they create). This ensures that all group members are familiar with the appearance and functionality of each page. Each page will adhere to the principles and elements of design; including: line, shape, balance, alignment, contrast, and space (J6 Design, 2015). This in turn, will lead to good software design, including functionality that is delivered to the user, non-functional objectives, and quality attributes. The HTML for this artefact will be further edited and tested by other group members. Once refined, the HTML will be used in combination with CSS to produce the final Customer Home page for the database.

Screen capture of where it's used
The webpages can be accessed by customers and employees through the online website. See below for annotations.

GUI for 'Customer Home' page:

Car Rental Company Logo (the Home Page of the site)

Navigation bar

Tabs for selection

Text field boxes for customers to search locations, dates and times to select/book a vehicle

Same background as every other webpage for continuity

Selection button (takes customer to next page).

First iteration [HTML only]:

The HTML for this artefact is shown below:

```html
<!DOCTYPE html>
<html>

<div style="height:50px; background-color:white", align="center", class="topnav">
  <a class="active" href="#home">CRC [Insert Logo]</a>
  <a href="#about">About</a>
  <a href="#contact">Contact</a>
  <a href="#fact">FAQ</a>
  <a href="#signin">Sign In</a>
</div>

<body style="background-color:#D0D0D0; background-image:url(background.jpg); background-size:cover;
background-repeat: no-repeat;">

<div style="background-color:white; height:40px", align="center">
  <a>Personal</a>
  <a style="background-color:#a6a6a6">Commercial</a>
  <a style="background-color:#66a3ff">-----------------------------------------------------</a>
 </div>

<div style="background-color:#F0F0F0; height: 30px", align="center">
  <a>Search your location...---------------------------------------------</a>
 </div>

<div style="background-color:white; height:30px"; align="center">
 </div>

  <div style="background-color:#F0F0F0; height: 30px", align="center">
    <a>DD/MM/YY</a>
    <a>Pick up time...---------------------------------------</a>
 </div>

 <div style="background-color:white; height:30px"; align="center">
 </div>

  <div style="background-color:white" align="center">
    <a style="background-color:#66a3ff"> Select Vehicle</a>
 </div>

 <div style="background-color:white; height:20px"; align="center">
 </div>

<footer>
  <p align="center">Created by BLINK192</p>
  <p align="center">Contact information: <a href="mailto:CarRentalCompany@example.com">
  CarRentalCompany@example.com</a>.</p>
</footer>

</div>

</body>
</html>
```
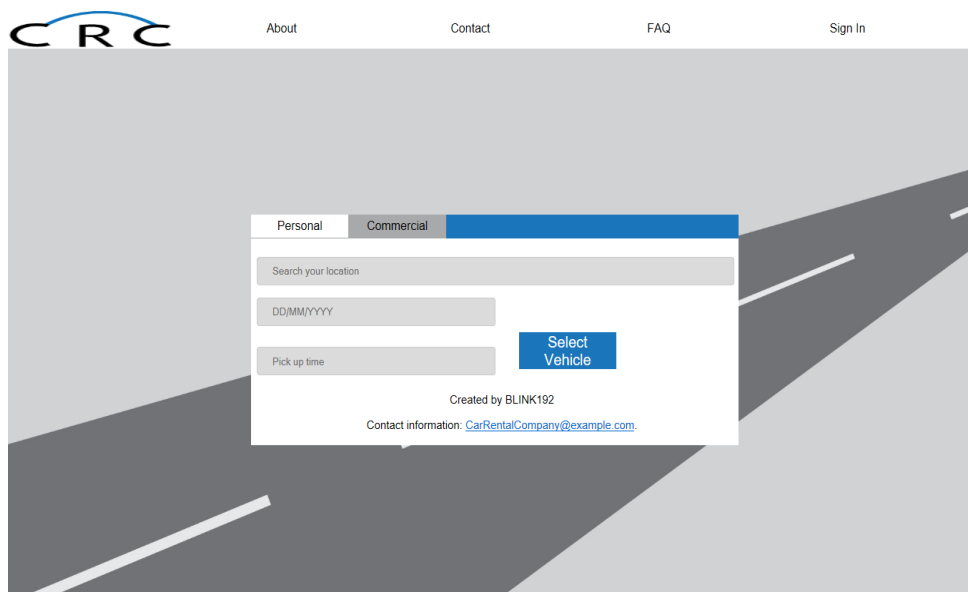
6

Second iteration: CSS and HTML [HTML styling deleted, and Kirsten's CSS added]

The HTML and CSS for this artefact [second iteration] is shown below:

```html
<!DOCTYPE html>

<html>
<head>
<style>
body
{
    background-image: url(background.jpg);
    background-size: cover;
    background-repeat: no-repeat;
    background-color: #d1d2d4;
    font-family: Arial;
    margin: 0;
}


h1
{
    padding-left: 20px;
    color: #1b75bb;
    font-size: 36px;
}


p
{
    padding-left: 20px;
    font-family: Arial;
        color: #000000;
        font-size: 15px;
}

ul.nav
{
    list-style-type: none;
    margin: 0;
    padding: 0;
    overflow: hidden;
    background-color: white;
    position: fixed;
    top: 0;
    width: 100%;
    color: black;
}
```

```css
.nav
{
    padding-right: 20px;
}

.nav
{
    height: 50px;
    width: 17%;
    float: left;
    color: black;
}

.nav a
{
    display: block;
    color: black;
    text-align: center;
    padding: 14px 16px;
    text-decoration: none;
}

.nav a:hover:not(.active)
{
    background-color: #b3e6ff;
    color: black;
}


img
{
    height: 50%;
}

button
{
    margin-left: 20px;
    background-color: #1b75bb;
    color: white;
    font-size: 20px;
    font-family: Arial;
    width: 20%;
    text-align:center;
    cursor: pointer;
    border:none;
}

button:hover
{

    background-color:white;
    color: #1b75bb;
}
```

```css
.linkers:link
{
    padding-left: 20px;
    color: #1549d6;
}

.linkers:hover
{
    color: 1549d6;
}

.linkers:active
{
    color: f2f241;
}

main
{
    margin-top:50px;
}

div
{
    background-color: white;
    width: 50%;
    height: 300px;
    margin:auto;
}

ul.everything
{
    list-style-type: none;
    overflow: hidden;
    background-color: #1b75bb;
    width: 100%;
    padding-left: 0;
}


li.everything
{
    background-color: #a7a9ab;
    float: left;
    width: 20%;
    color: black;
    border-bottom: 1px solid #a7a9ab;
    text-align: center;
    height: 25px;
    padding-top: 5px;
}
```

```css
.active
{
    background-color: white;
    float: left;
    width:20%;
    color: black;
    border-bottom: 1px solid #a7a9ab;
    text-align: center;
    height: 25px;
    padding-top: 5px;
}

.location
{
    width: 98%;
    padding:10px 20px;
    margin:8px;
    display: inline-block;
    border: 1px solid #ccc;
    border-radius: 4px;
    box-sizing: border-box;
    background-color: #dbdbdb;
    color:black;
}

.others
{
    width: 49%;
    padding:10px 20px;
    margin:8px;
    display: inline-block;
    border: 1px solid #ccc;
    border-radius: 4px;
    box-sizing: border-box;
    background-color: #dbdbdb;
    color:black;
}

.divlinks
{
    color:black;
    text-decoration: none;
}


.seperation
{
    height:200px;
    opacity: 0;
    background-color:#d1d2d4;
}

.centeredtext
{
    text-align:center;
}
```

```
</style>
</head>
<body>

<ul class = "nav">
    <li> <img class = "nav" src = "logo.png"> </li>
    <li><a class = "nav" href = "https://www.google.com.au/">
About</a> </li>
    <li><a class = "nav" href = "https://www.google.com.au/">
Contact </a></li>
    <li><a class = "nav" href = "https://www.google.com.au/">
FAQ</a></li>
    <li><a class = "nav" href = "https://www.google.com.au/"> Sign
In </a></li>

</ul>


<main>

<div class = "seperation"> </div>
<div>
<ul class = "everything">
    <li class = "active"> <a class ="divlinks" href
="#">Personal</a></li>
    <li class = "everything"> <a class ="divlinks" href
="#">Commercial</a></li>
</ul>

<input class = "location" type = "text" name = "location"
placeholder = "Search your location">

<input class = "others" type = "text" name = "date" placeholder =
"DD/MM/YYYY">
<input class = "others" type = "text" name = "date" placeholder =
"Pick up time">
<button>Select Vehicle</button>


<footer>
  <p align="center">Created by BLINK192</p>
  <p align="center">Contact information: <a
href="mailto:CarRentalCompany@example.com">
  CarRentalCompany@example.com</a>.</p>
</footer>


</div>

</main>

</body>
</html>
```

This has been committed to GitHub: Github Commit –

taylorbindon/IFB299/Documents/Wenona Home Page Version 1 - HTML Only.txt

taylorbindon/IFB299/Documents/Wenona Home Page Version 2 - HTML with CSS.txt

Artefact 3 – HTML Testing

Artefact description

This artefact includes the testing of the Employee Login Page (created by Kirsten). The comments below show the feedback provided.

Feedback:

It is excellent how the page is reactive: e.g. a user must first select if they are a customer or an employee. Once the 'Employees' tab is selected, an interactive box opens. The employee is guided to enter a username and password. The username and password indicators appear in light grey and disappear when typing begins. The submit button is also successful. The page includes the standard horizontal navigation bar and CRC logo to indicate how to return to the home page. After testing the HTML/CSS it is clear that the styling elements have been correctly executed through CSS using classes, and the HTML has been correctly executed using elements and divs. Kirsten's code includes high level elements such as JavaScript to implement tabs. Overall the page adheres to the requirements specified by CRC and is functional. The HTML could be further improved by the implementation of containers and linking all pages.

Contribution to the project/how it was used

The testing of other team member's artefacts allows each team member to receive feedback regarding their HTML. This was used to make improvements to the HTML and alterations to the CSS.

Screen capture of where it's used

Kirsten's page: Customer and Employee sign in (used as the example for web-based architecture).
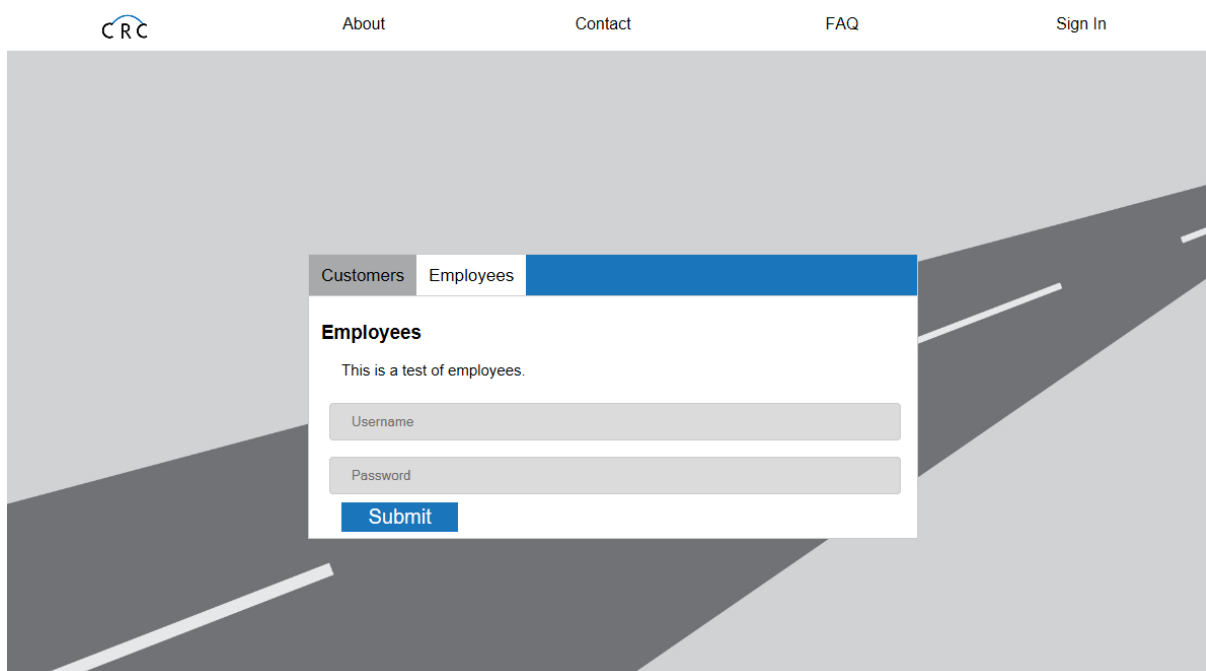
Artefact 4 – Requirements and client meetings

Artefact description
This artefact contains the information recorded from meetings with the client(s).

Contribution to the project/how it was used
Meetings with the client have been used to gain clarification and communicate the progress of Sprint 1. This information was used to improve the design of the webpage and develop a clear understanding of the requirements for the database. For example, the client communicated their preferred webpage design. CRC also had specific requirements, e.g. that employees and customers sign in through the same page. The team will continue to work on the user stories required for Sprint 1.

Screen capture of where it's used
Below is the table produced that details the new/improved requirements.

Meeting #	Date	Time	Discussion Points/Requirements
1	30th August 2018	10am – 12pm	▪ Client wants the overall design of the page to be minimal and simple. ▪ Page is to use the colours of the organisation: blue (#1b75bb) and grey (#a7a9ab). ▪ The current business model processes were discussed [descriptions in artefact 5].
2	5th September 2018	8am – 9:30am	▪ Employees and customers sign in through the same page. ▪ Home page is to feature the CRC logo. ▪ Reviewing and finalising the BPMN models [artefact 5]. ▪ View and approve GUI mock-ups.
3	10th September 2018	2pm-4pm	▪ Viewing and discussing the progress of the webpage design and database structure. ▪ Discuss and explain the following: class diagram, logical and physical diagram, component diagram, and data flow diagram.
4	18th September 2018	2pm-3pm	▪ Approve final HTML design. ▪ Inform CRC how to use the database (e.g. if an employee creates a new customer on the database, all entry fields cannot be NULL – information must be entered).

			• Informing CRC that if they wish to download an updated report, a board member must update the CRC database and then follow the process in BPMN 'Model 2 – Board member process'. • Inform CRC that the database is structured according to employee hierarchy (e.g. employees will be able to access different information depending on their role. Board members will have access to more information [i.e. financial reports] than general staff).

Supporting Documentation:

Meeting 1:

Business Process Model 1: rent-a-vehicle process

The main process executed by CRC is hiring vehicles. The client described the current process step-by-step. This was recorded below:

The process starts when an enquiry is received by a customer. The staff member gathers information regarding the client and either approves the rental or denies the rental. If approved, the staff member rents the car and records the customer information on the CRC Local Database. CRC waits to receive the hired car, then performs a final inspection. If the vehicles passes the inspection, the vehicle is marked as returned and the process ends. If the inspection fails the staff member sends a report, followed by an invoice (two days later). Once payment is received from any damages caused, the staff member then updates the database.
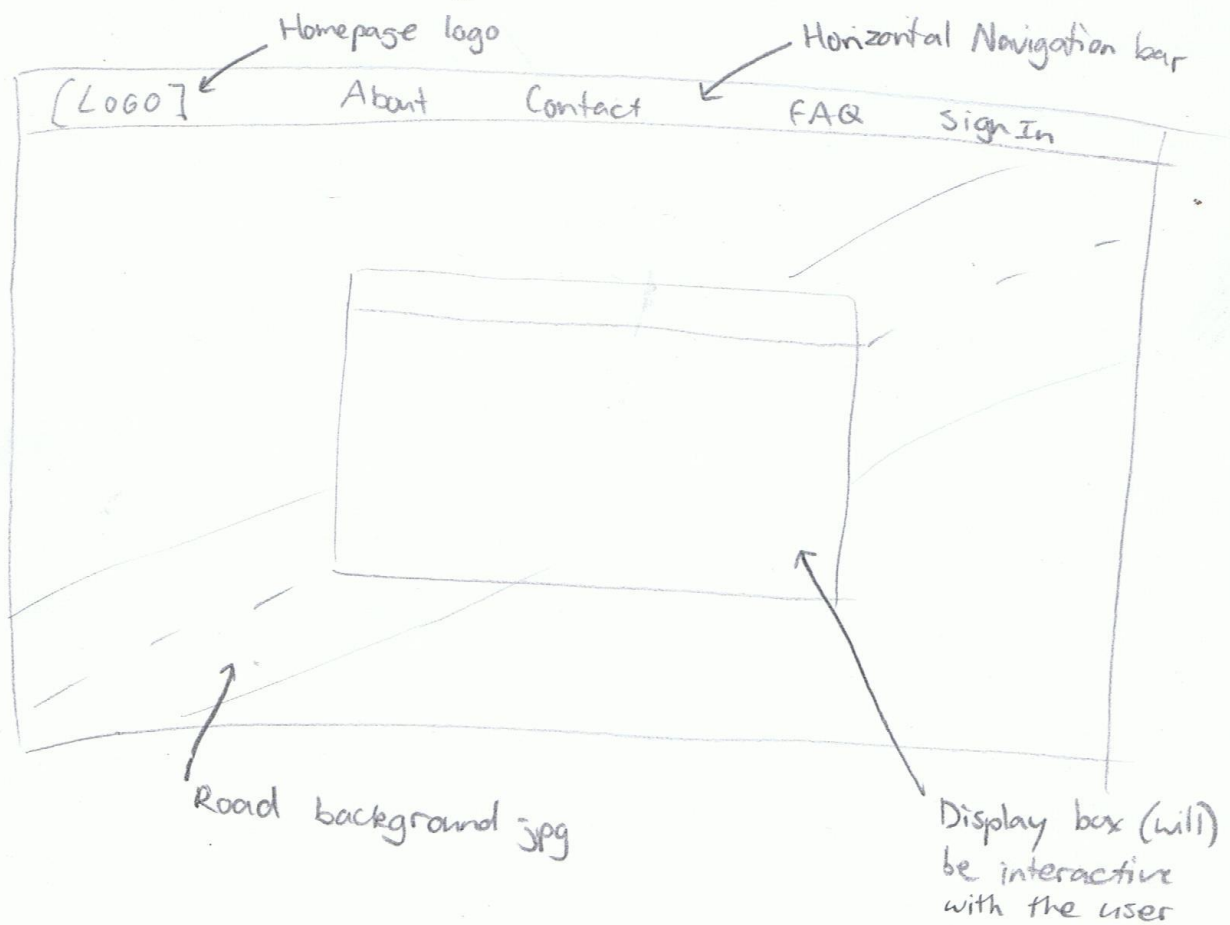
The BPMN for this model is shown in Artefact 5.

Web page notes:

See next page.

Meeting 1 – Web page notes   30/8/18

Homepage logo   Horizontal Navigation bar

[LOGO]   About   Contact   FAQ   Sign In

Road background jpg

Display box (will)
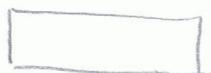be interactive
with the user

Colour guide:

- light grey

- dark grey (background/unselected tabs)

- white for display boxes

- blue from CRC logo (symbolizes
  stability and intelligence; represents
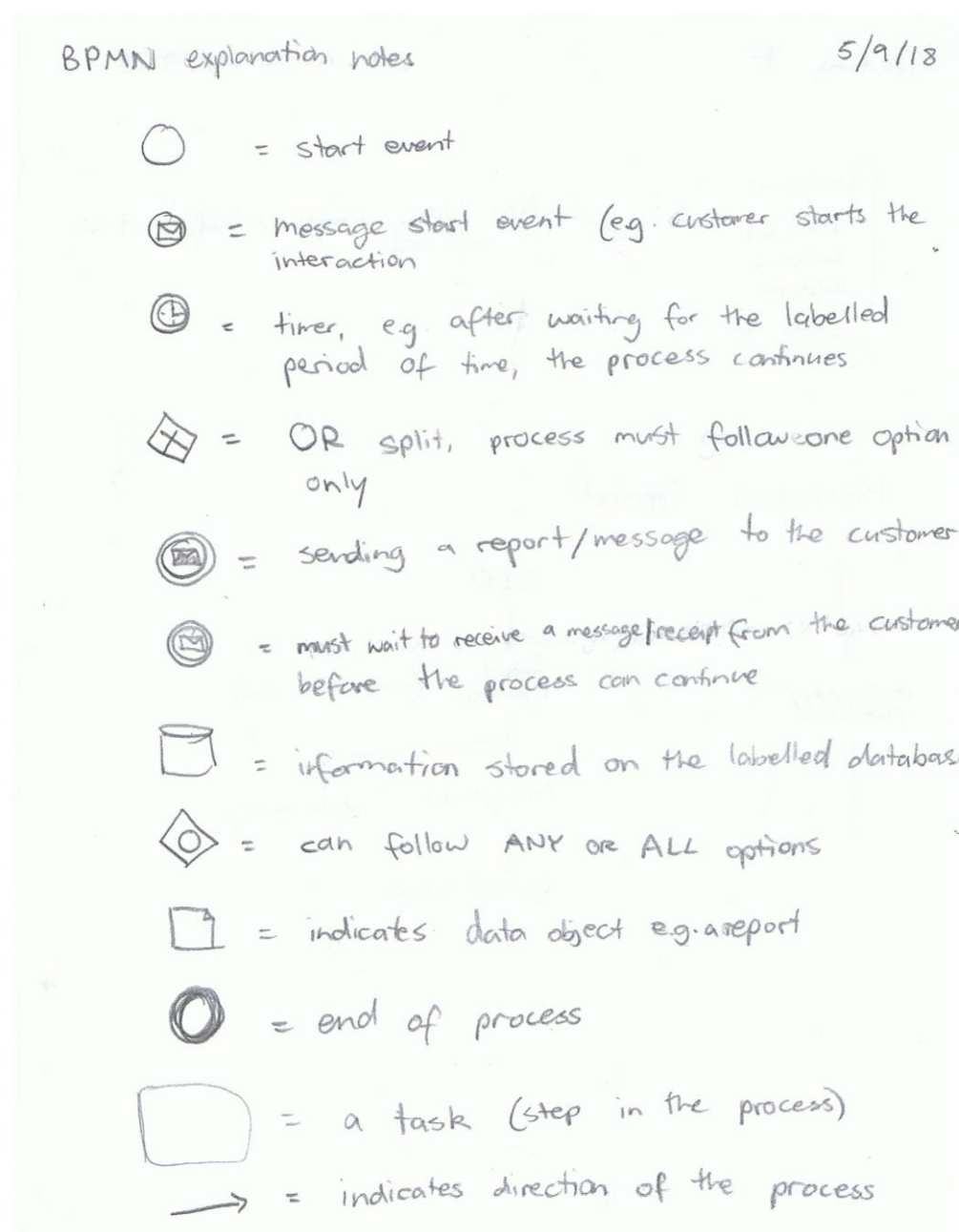 freedom and inspiration)

Meeting 2:

CRC Logo

The client provided the logo to be used in the homepage.

Reviewing the BPMN Models:

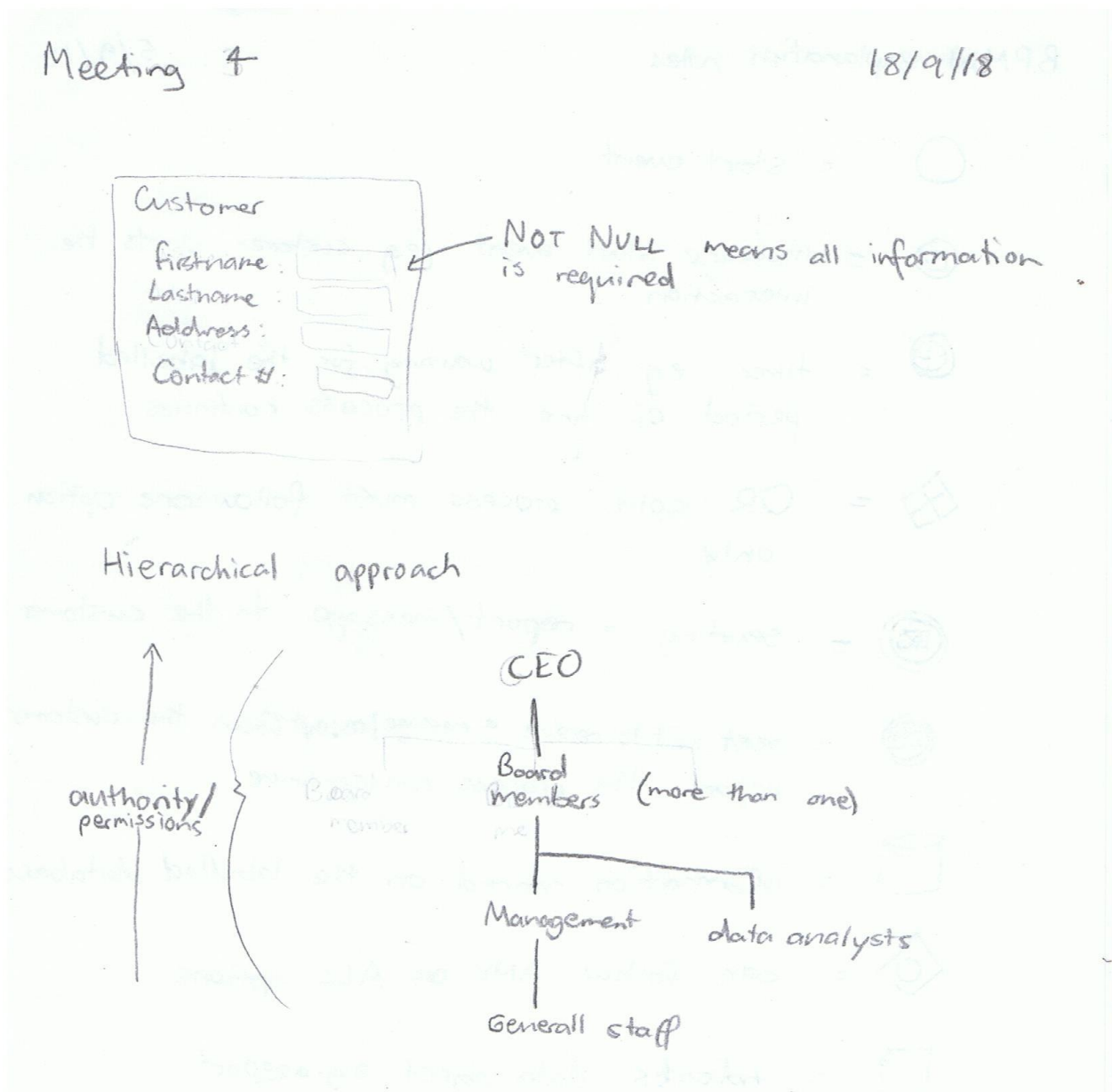BPMN models contained in Artefact 5. See below for explanation of elements.

Meeting 3:

Diagrams:

Discussed the diagrams completed by various group members. Submitted as individual artefacts.

Meeting 4:

NOT NULL and hierarchical approach:

Artefact 5 – Business Process Modelling

Artefact description

This artefact contains four business process models. Business Processing Modelling Notation, "…is a graphical notation that depicts the steps in a business process" (Object Management Group, 2018). The first model (Model 1: rent-a-vehicle process) shows the current process for a customer to hire a vehicle from CRC. Currently the system only records data once a customer physically enters a CRC location and proceeds to book a vehicle (this is assumed from the facts provided). The new database management system will enable customers to view and book vehicles online, as well as provide additional functionalities to staff. Models 2 – 4 show the BPMN models for the future state of CRC (once the database is implemented) from the board, general staff and customer perspectives.

Contribution to the project/how it was used

A process modelling software provides a representation of the 'as-is' process as compared to the 'to-be' process (Ramesh, 2017). This allows CRC to understand and adapt to change and improve the overall efficiency of business processes. The following BPMN diagrams will be used to illustrate the future business process and explain the improved system design to fellow group members as well as the client [in the scheduled meetings].

## Screen capture of where it's used

See next page.

Model 1: Rent-a-vehicle process
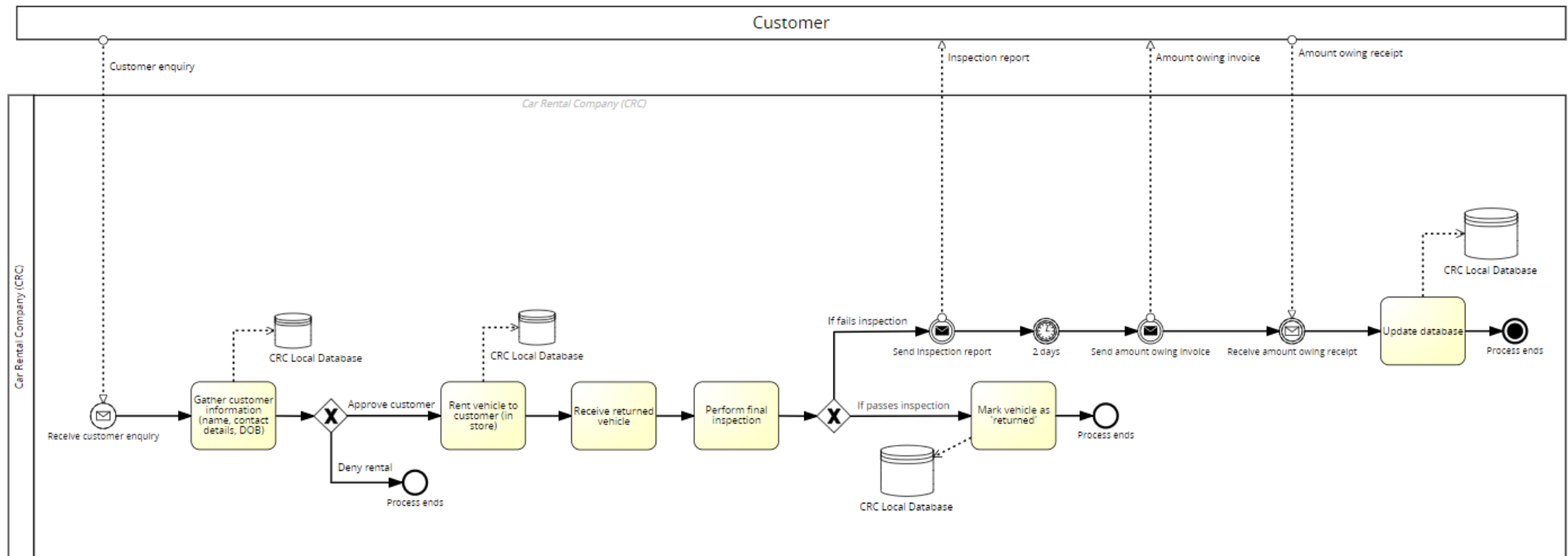
The model above shows the **current process** to rent-a-vehicle executed by a CRC staff member. This process was described in the first meeting with the client and is seen in Artefact 4.

NT: This information was sourced from meetings with the client. It is assumed that the CRC Local Database is automatically linked to the CRC Central Database.

Model 2: Board member process
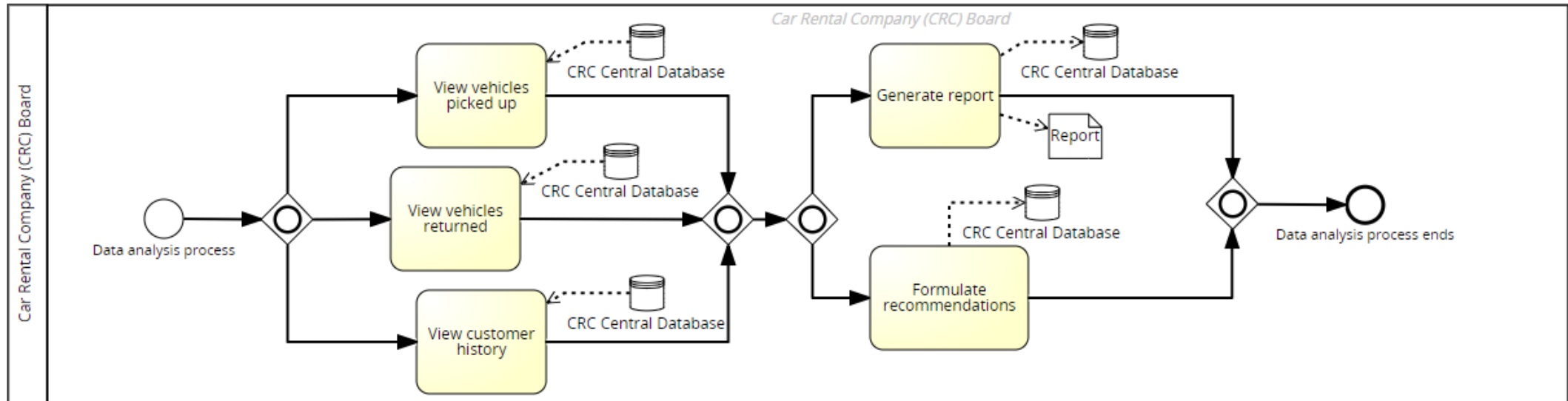
The model above shows the **future process** (when the database is implemented) for a board member to generate reports and store recommendations in the database. Board members can view any or all the data available: vehicles picked up, vehicles returned, and customer history from the CRC Central Database. Board members can then generate a report and/or formulate recommendations which are stored on the database. Recommendations can be accessed by a customer through the web interface. Further additional functionalities will be implemented in future as required.

NT: This information was sourced from meetings with the client. It is assumed that the CRC Local Database is automatically linked to the CRC Central Database.

Model 3: Management query process
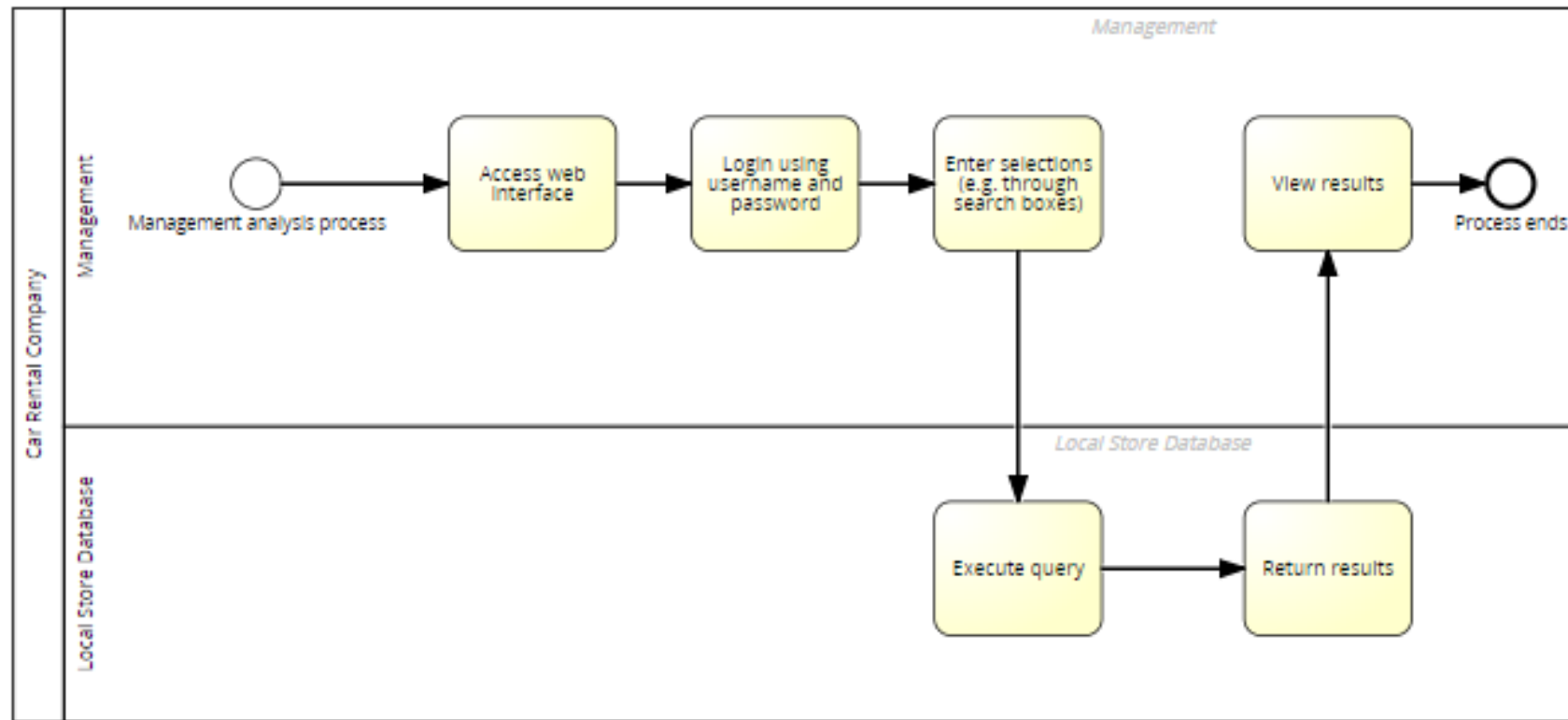
The model above shows the **future process** (when the database is implemented) for a staff member, manager or data analyst to fetch data from the database and display the information in a proper format. The staff member accesses the web interface, signs in and enters their selections. The Local Store Database executes the query and returns the results. The staff member then views the results of the query.

NT: This information was sourced from meetings with the client. It is assumed that the CRC Local Database is automatically linked to the CRC central database.

Model 4: Customer booking process
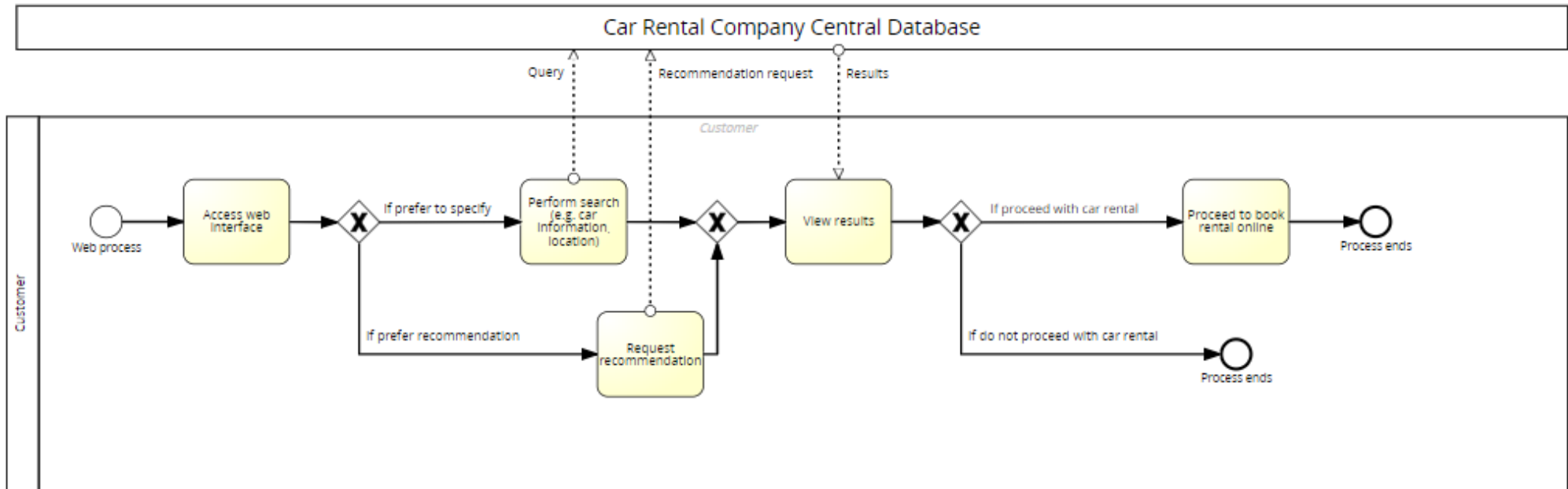
The model above shows the **future process** (when the database is implemented) for a customer to access the web interface, view the cars available and proceed to book/hire a vehicle. A customer access the web interface. They can choose to perform a specific search (e.g. through vehicle type) or request a recommendation. The customer can then view the results and choose to proceed with booking a rental or not to proceed.

NT: This information was sourced from meetings with the client. It is assumed that the CRC Local Database is automatically linked to the CRC Central Database.

References

J6 Design. (2015). The Principles of Design. Retrieved from http://www.j6design.com.au/6-principles-of-design/

Object Management Group. (2018). BPMN Specification – Business Process Model and Notation. Retrieved from http://www.bpmn.org/

Patient Account Services. (2018). Web-based vs Client/Server Comparison. Retrieved from http://www.patientaccountservices.com/articles/5/Web-based-vs-Client-Server-Comparison

Ramesh, A. (2018, November 6). What is business process modelling? Is BPMN the best technique? [Blog comment]. Retrieved from https://www.quora.com/What-is-business-process-modeling-Is-BPMN-the-best-technique

SoftwareTestingHelp. (2018). What is client-server and web-based testing and how to test these applications. Retrieved from https://www.softwaretestinghelp.com/what-is-client-server-and-web-based-testing-and-how-to-test-these-applications/

Stringfellow, A. (2018). What is Web Application Architecture? How It Works, Trends, Best Practices and More. Retrieved from https://stackify.com/web-application-architecture/