

Final Report

Online Car Insurance Payment and Renewal System

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Client: The Insurance Corporation of British Columbia (ICBC)

Purpose of The Report: fulfilling the course requirements of CSC375; proposing a more digital and efficient solution of running business for ICBC

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Introduction

The Insurance Corporation of British Columbia (ICBC) is a provincial crown corporation and the only designated company to provide the mandatory car insurance services in BC. By provincial law, any vehicle registered, driven or parked on public spaces in BC must be covered by ICBC insurance package (Autoplan) through independent brokers.

ICBC's System Problem

Since 1973, the Insurance Corporation of British Columbia (ICBC) has been the sole provider of basic auto insurance and the largest provider of optional auto insurance in British Columbia. For 45 years, ICBC has done business exclusively through brokers and brokerages. However, the current system has been required people to visit their local office and buy, renew and make changes to their insurance for most of the time since found. The current method is old, inconvenient, and inefficient after researching; in the way that customers often do not know how much more they need to pay for commission fees and sometimes feel simple procedures are time consuming and expensive.

Team Background

Name	Academic and Practical Experience	Plans for after Graduation
Cheng, Crystal	<ul style="list-style-type: none">• 4rd year at Uvic• Major in Health Information Science• Will be co-op as System Analyst at PHSA in Spring 2019	<ul style="list-style-type: none">• Apply for jobs in related fields• May continue on study of Elementary Education at UVic
He, Holin	<ul style="list-style-type: none">• 3rd year at UVic• Major in Computer Science• Simple system(finished functionality) testing experience	<ul style="list-style-type: none">• Apply for QA jobs• Work at Tesla• Work at VICE

Li, Zijie	<ul style="list-style-type: none"> • 4th year at UVic • Major in computer science • App development experience 	<ul style="list-style-type: none"> • Apply for related intern job • Apply for graduate study
Liang, Willson	<ul style="list-style-type: none"> • 4th year CSC student • Worked as a broker for 2 years 	<ul style="list-style-type: none"> • Work in insurance industry • Cyber security • Game design
Liu, Sola	<ul style="list-style-type: none"> • 3rd year at Uvic • Major in Health Information Science • Applying the co-op job for Spring 	<ul style="list-style-type: none"> • Apply the related job • Maybe study the System Analysis major for graduate study
Su, Lambert	<ul style="list-style-type: none"> • 4th year at UVic • Major in Computer Science • SAP software development and test co-op experiences in China-jay Incorporation 	<ul style="list-style-type: none"> • Apply for graduate studies at Uvic • Apply for career jobs related to software development and test in Canada • Apply for career jobs in China

Zhang, Weiyi	<ul style="list-style-type: none">• 3rd year at UVic• Major in Computer Science• Registered in co-op program and is seeking co-op opportunities	<ul style="list-style-type: none">• Apply for computer science related positions• May pursue graduate study in computer science.
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Abstract

Nowadays, with the significant and considerable development of internet technologies. People are trying to find more convenient and efficient way for doing business in different areas. However, when we are talking to the Insurance services. The Insurance Corporation of British Columbia (ICBC) is a provincial crown corporation and the only designated company in order to provide the mandatory car insurance services in BC. Unfortunately, the ICBC is still doing business like it did 45 years ago which will let car owners go to brokerages in person each time when the insurance services is required.

As time passed by, the impending problems appeared from the old system become more obvious. Furthermore, people are complaining more and more about the inconvenience and low efficiency related to the current ICBC insurance system. Car owners actually don't exactly know much they paid for the commission fees. At the same time, similar technologies already exists like other provinces and countries such as Ontario and the United States already allow customers to renew their car insurance and receive their decals online.

Therefore, the new insurance system for people in BC is highly needed to be developed. In the development process, we came up with an alternative solution that was very distinct from the current one: by passing ICBC, it might be possible to create an online insurance renewal system for interaction between vehicle owners and brokers directly. Such method has potential merits like increasing efficiency of handling the insurance cases since drivers will not be required to access the service through ICBC.

Our recommended solution is to create one online website base system. The system will enable customers to change their basic personal information, renew & change car insurance, change vehicle rate class & coverage and receive decals directly through the online system. Besides, we will also develop a referral system for brokers for another sales tool. The new system should follows the BC's privacy laws. Since the whole project is giant and complicated, we will focus more the user's experiences including convenience, efficiency and low-cost.

Current System Description

In today's BC, if people want to buy a new car or continue driving the car that they owned, they must buy or renew the insurance for their cars in ICBC. As for the new drivers, they need to find a broker to help them choose the right insurance. However, for existing drivers who want to renew their insurance, they may pay upwards of \$150 in commissions without even knowing. Drivers need go to their local ICBC office or find a broker except for when drivers are purchasing a new car, where there is an ICBC representative selling insurance in the dealership. Many brokerages and ICBC offices open between 8:00 a.m. and 4:30 p.m.(Monday to Friday). The inconvenience might directly appear from that there have always been situations that people who have busy schedule at work just cannot show up during the office hours. At the same time, some users might also missed out the appropriate time to renew their Insurance. In addition, new drivers with no connections to a broker may have trouble selecting the proper amount of insurance they need. The problem overall is that the drivers in BC need an more efficient and flexible system to manage their car insurance and all relative services.

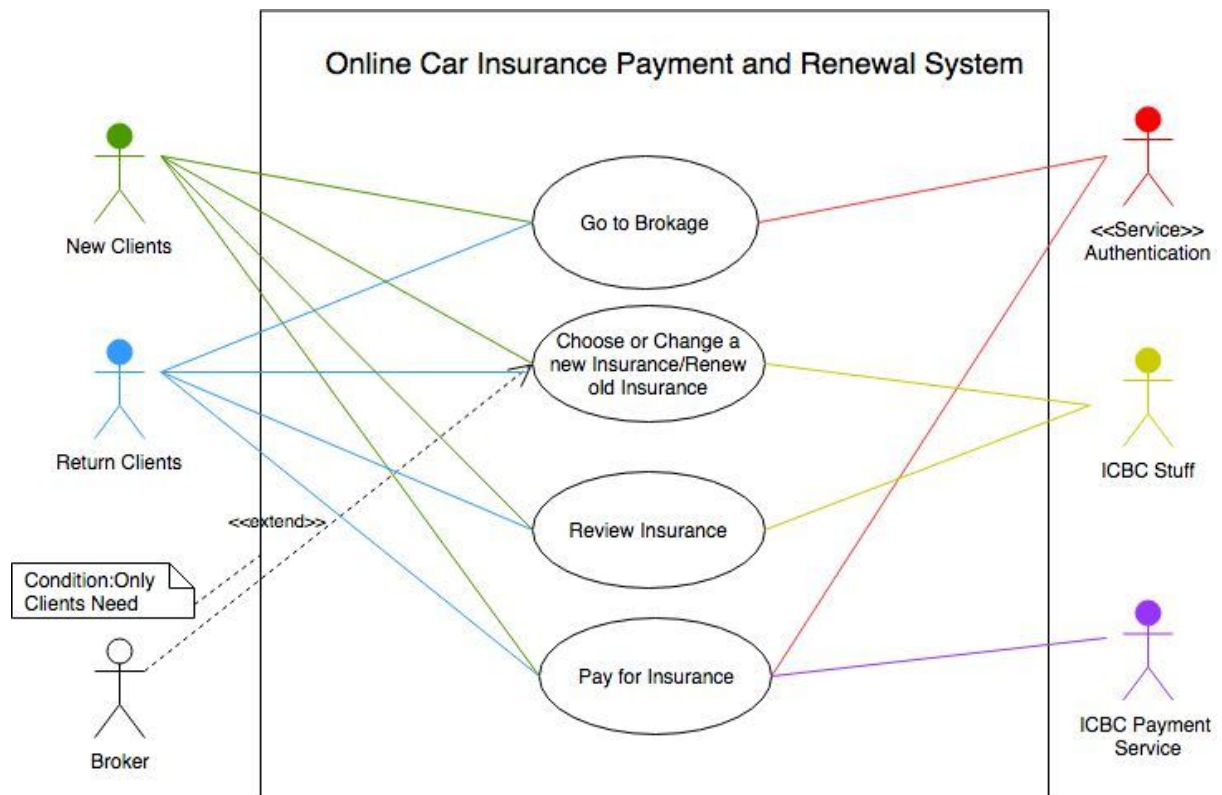
Environmental and Behavioral Model

ICBC generally provides autoplan insurances for all car owners in British Columbia through their province- wide thousands of autoplan brokers. The ICBC Basic autoplan insurance is required coverage for all vehicles in BC. It will help drivers protected by basic coverages as well as their own safety. When customers firstly owned a car. The nearest local ICBC office will send a broker come to the 4s shop to discuss the insurance autoplan with them. It is common that the insurance plan is hard to understand for some people that never choose insurance plan before. Therefore the broker is there to help customers to choose and compare autoplan options based on customers' requires and needs.

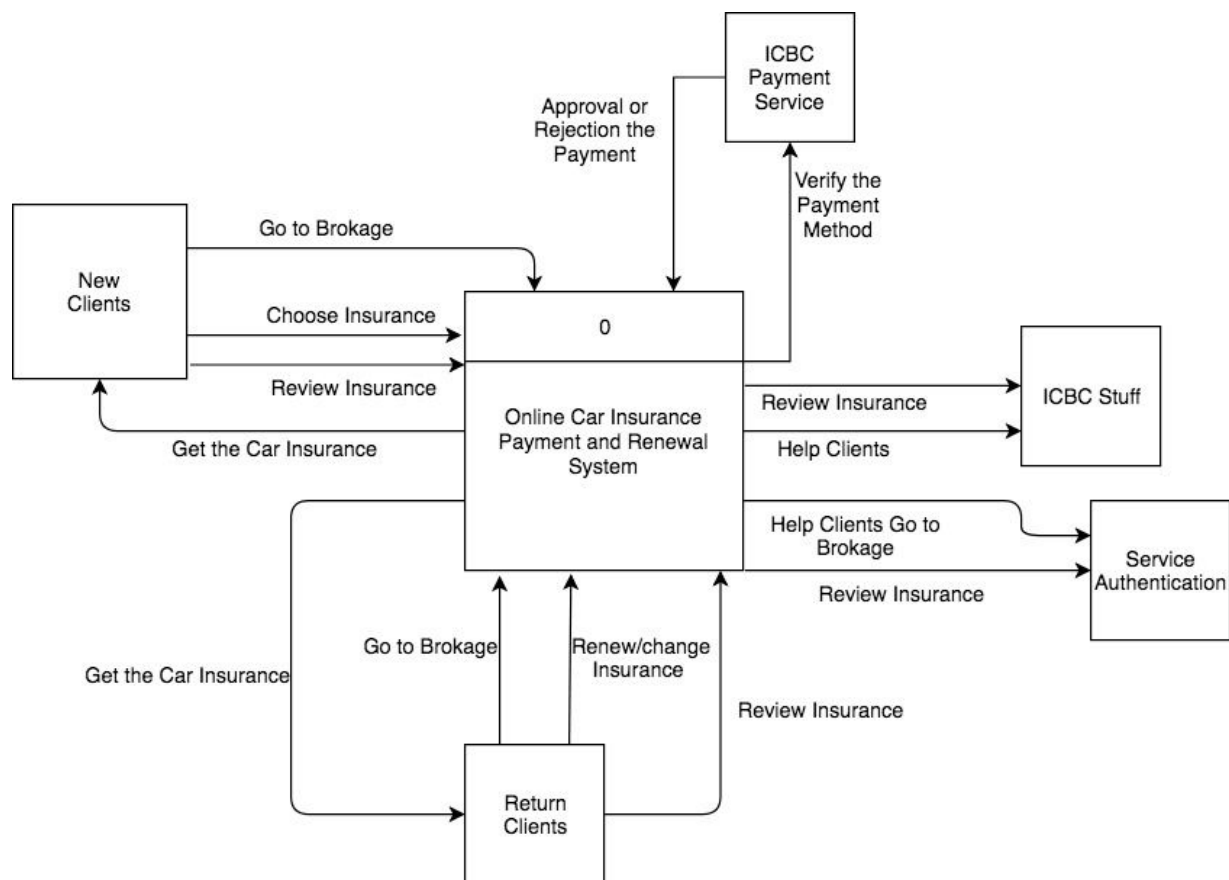
To be more specific, the broker might ask them for choosing the policy length for the first time. The most common plan will be the one-year autoplan policy since this plan is mostly chosen by car-owners. And for the payment option, the monthly payment is available if they don't want to pay too much at the beginning. However, if the customer wants some other policy lengths, ICBC also provides short-term autoplan(3 to 11 months) and temporary operation(1 to 15 days) for those customer who has special needs. For the insurance rate classes, different classes will result in different insurance prices. The common rate class includes pleasure, commuting, business and delivery.

After set up the payment method with the bank and sign the contract with ICBC, the ICBC stuff will approve the documents and then customers' information will be stored in the database. For renewing the current insurance plan in the later days, customers can renew insurance early and up to 55 days before the autoplan expires. Is the driver's responsibilities to keep the insurance information correctly up to date, otherwise they might not be covered if the claim is issued in the future days. Car owners still need to goto local brokages for making changes like address moving, rate classes, vehicle changing, vehicle modifying and so on. For any further questions, helps,tickets, fines, or penalties, drivers needs to goto local services desk. All rights reserved from ICBC.

Current System Use Case Diagram



Current System Context Diagram



Benefit Analysis

The benefits for each party and individual involved in the proposed system are shown below:

- **Customers:** an online system allows customers to do transactions at anytime in the convenience of their own homes. Customers can also be more informed of what their insurance provides by having the option to read a short, concise description of each coverage
- **Brokers:** the proposed online system is an excellent tool for brokers. By providing brokers their own personal code, we can set up a referral system where brokers send customers a link to the online system with their personal broker code. Brokers can walk the client through the system or even do the renewal for them. This way, brokers have another method to earn commission as well as keep and expand their clientbase.
- **ICBC:** currently, the mandatory Autoplan insurance keeps ICBC in the Black. The premiums which make a profit come from the optional coverages provided such as Extended Third Party Liability and Comprehensive Coverage. With the increasing amount of competition from other insurance companies also offering optional

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insurance, ICBC has much to gain from this proposed system. With happier clients and an easy to use system, customer retention rates will go up as will the rate of bringing clients over from other companies. Moreover, this system will decrease the workload of ICBC's employees, which would result in lowering the payroll expenses in every ICBC office. Since ICBC will be providing mandatory insurance for the foreseeable future, this system will greatly benefit ICBC in the long term

Cost Analysis

Our cost analysis for the proposed system include the following four categories:

- **Equipment:** in order to build the proposed online system, ICBC needs to purchase hardwares, like servers and computers, and software licenses, like the software for web design
- **Employee:** ICBC needs to hire system analysts to analyze, design and implement the system; Also, ICBC needs to hire developers to develop the system and for further maintainence
- **Advertisement:** in order to let more customers know the system, ICBC needs to do some advertisements about the system using different strategies like traditional advertising and digital advertising
- **Shipping for decals:** once ICBC's customers buy or renew the insurance using the system, ICBC needs to ship the decal to the customers, which needs to cooperate with express company

New System Description

The proposed system will focus on ease of usability for the user. ICBC already has a good website to build on (www.icbc.com). Once the system is complete, we can add a large button on the homepage for customers to access our system. Our system will allow users to: Change basic personal information such as address and phone number, renew their car insurance, change their rate class and optional coverages, and receive their decal online. This system is a complete rework of the existing system. Currently, all transactions must be done in an approved brokerage by a licensed broker. By implementing our system, we completely change the dynamic of ICBC's business model, which is why we only allow the most basic transactions to be done through our system.

The proposed model we will use has a homepage where customers sign up using their name, existing policy information, and date of birth. Once logged in, the customer can choose from a list of options what they want to do. Their options are to renew or change their existing policy, update their personal info, or look for a nearby brokerage. If the customer chooses to change their policy, they are brought to a screen with a list of their existing policies and vehicles. From here, they can choose the policy they wish to view or change and make the changes they want. The client chooses the policy to make mid-term changes and here, they can change their coverage from tick boxes and drop boxes. The customer can also change their rate class, with a description of each rate class given to them. Back at the homepage, if the customer wishes to renew their insurance, they will be given a list of upcoming policies which can be renewed and one is chosen from there. The customer can decide the coverage

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amount and the policy period. After either transactions are complete, the customer will be shown to the payment page which shows comparison between the existing policy and the proposed changes. The client is then prompted for their credit card information and once payment is complete, a receipt can be printed and a decal will be mailed to them if they did a renewal.

Behavioural and Environmental Model

For the brokerages and brokers, we do not expect a significant change in how they do business. The majority of income from brokerages come from home and commercial insurance. Those brokerages who have a large percentage of their business from auto insurance focus on customers with large fleets of vehicles such as BC Hydro, which takes teams of brokers and can not possibly be done on our system. As such, the implementation of our proposed system will not have a significant impact in the brokerage's behavioural model.

Brokers are given their own referral link with their personal code to send to their clients. This link leads to the icbc online systems homepage and everything is the same for the customer except the broker receives commission. This is a useful tool for brokers who have a younger, more tech savvy clientbase. Although some brokers may utilize this system extensively, we believe there will not be a shift from the current system of face to face or over the phone business towards the online model. Rather, the online system will be a tool which can be utilized if traditional methods can not be used.

For ICBC, the new system completely changes how they conduct transactions. Currently, only licensed brokers can process ICBC transactions while physically inside a licensed brokerage and a paper copy of each transaction is required to be held by the brokerage for a number of years. Our proposed system does not follow any of these procedures. For example: ICBC will need to digitally store the online transactions look for the records themselves on the system rather than ask a brokerage to provide the paper documents during an audit. ICBC will be required to upgrade their internal operations in order to accommodate our system. Training or hiring staff to handle internal affairs will be required. Overall, this is a big change for ICBC and it will take some time for them to adjust.

Data Dictionary

Entity Name	Entity Description	Data Type
Broker	Licensed individual who processes insurance transactions	String, Person
Brokerage	Establishment permitted to purchase insurance for	String, Company

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	customers	
Customer	Resident of BC purchasing vehicle insurance	String, Person
Policy Number	Alphanumeric identifier of a customer's policy	String
Name	First and Last name of customer	String
Coverage	Amount ICBC will pay for a claim to the customer	Integer
Rate Class	How a vehicle is used ordered into different classes	Integer

New System Use Case Specification

Name: Buy Insurance

Actors: New Clients

Preconditions: The new clients registered their cars and did not purchase insurance yet

Steps:

1. Create a new account by filling out personal information
2. Apply for insurance coverage by selecting the protection package that they want
3. Review chosen insurance plan
4. Fills out the payment information
5. Proceeds to checkout with a third-party system for online payment

Success Condition: online payment confirmation

Alternate Paths: 2 a) The new clients are not familiar with insurance and want broker to help compare and customize insurance coverage to fit their needs

Name: Renew Insurance

Actors: Returned Clients

Preconditions: The policy of returned clients will be expired (in 55 days)

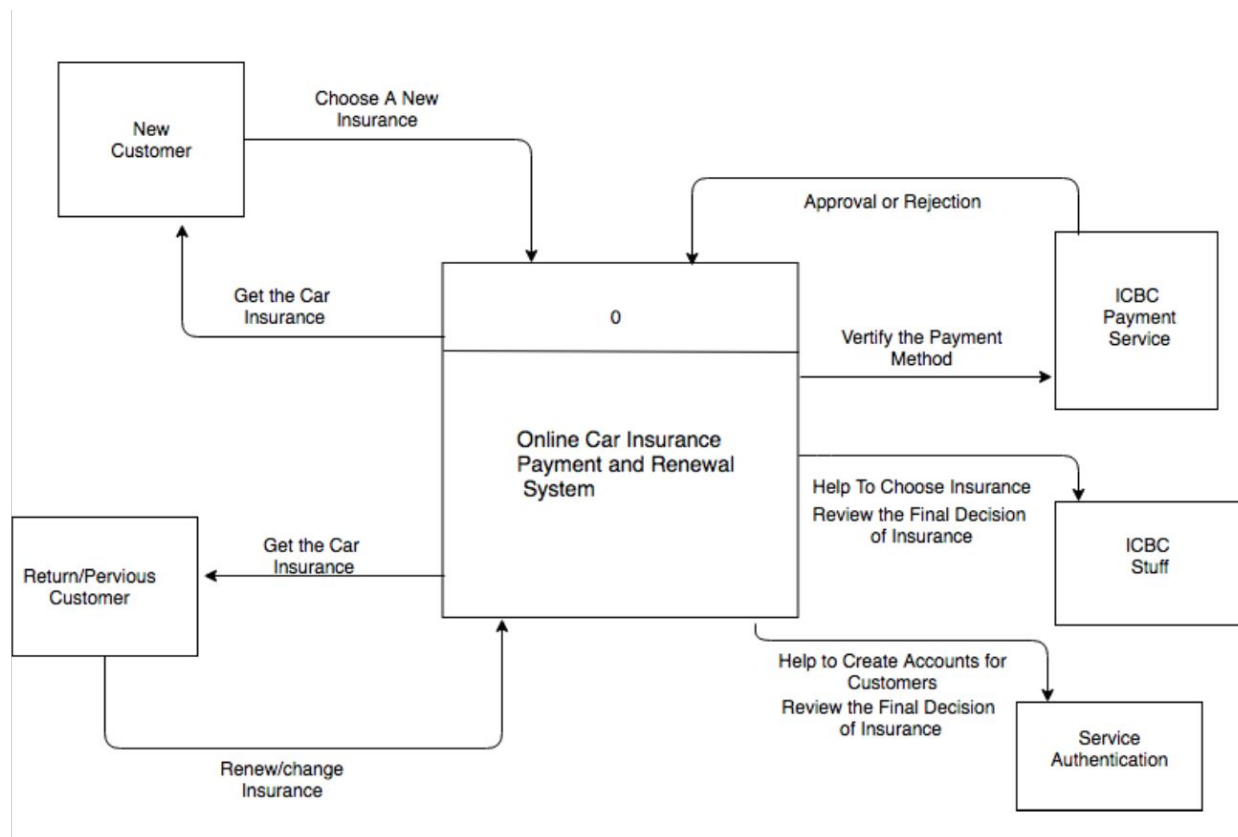
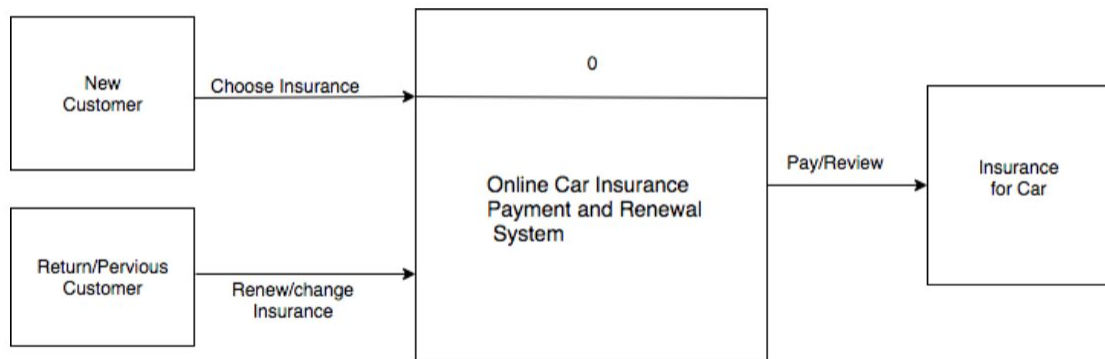
Steps:

1. Log into their accounts
2. Renew or change their insurance coverage by selecting the protection package
3. Review chosen insurance plan
4. Fills out the payment information
5. Proceeds to checkout with a third-party system for online payment

Success Condition: online payment confirmation

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New System Context Diagram



Recommendations

Below is a detailed list of all the recommendations that we are making to the client:

- Follow the Tutorial: the development team will design and create a interactive website tutorial overlay on the website instead of documenting an instructions manual. We recommend our both the clients and the ICBC customers to follow the tutorial overlay step by step to be familiar with the system if they are the first time users. They also can chose to skip the tutorial if they know how to use the system
- Give Feedback: we recommend our clients to communicate with our development team regularly to provide feedback and tell us about their concerns during the time they uses our system. We will implement useful features and improve the usability of the system based on the feedback we got from our clients after assessing the implementation difficulty
- Provide Accessibility: many immigrants and newcomers in BC do not speak in English for their first language. Therefore we recommend the clients hire multilingual staff and volunteer to assist users who can not use the online system in English on-site in ICBC office. Also our clients should provide necessary assistance for users with disabilities or limited range of movement. Starting from French, we will gradually add multi-language support online.
- Getting Ready for Server Overcrowding: we strongly recommend ICBC to do a whole system upgrade before the launch of the new system, we anticipate that once the online car insurance system debuts, it will not take many weeks for vehicle owners to flood in; it is absolutely essential to upgrade the ICBC server capacity and run database check regularly

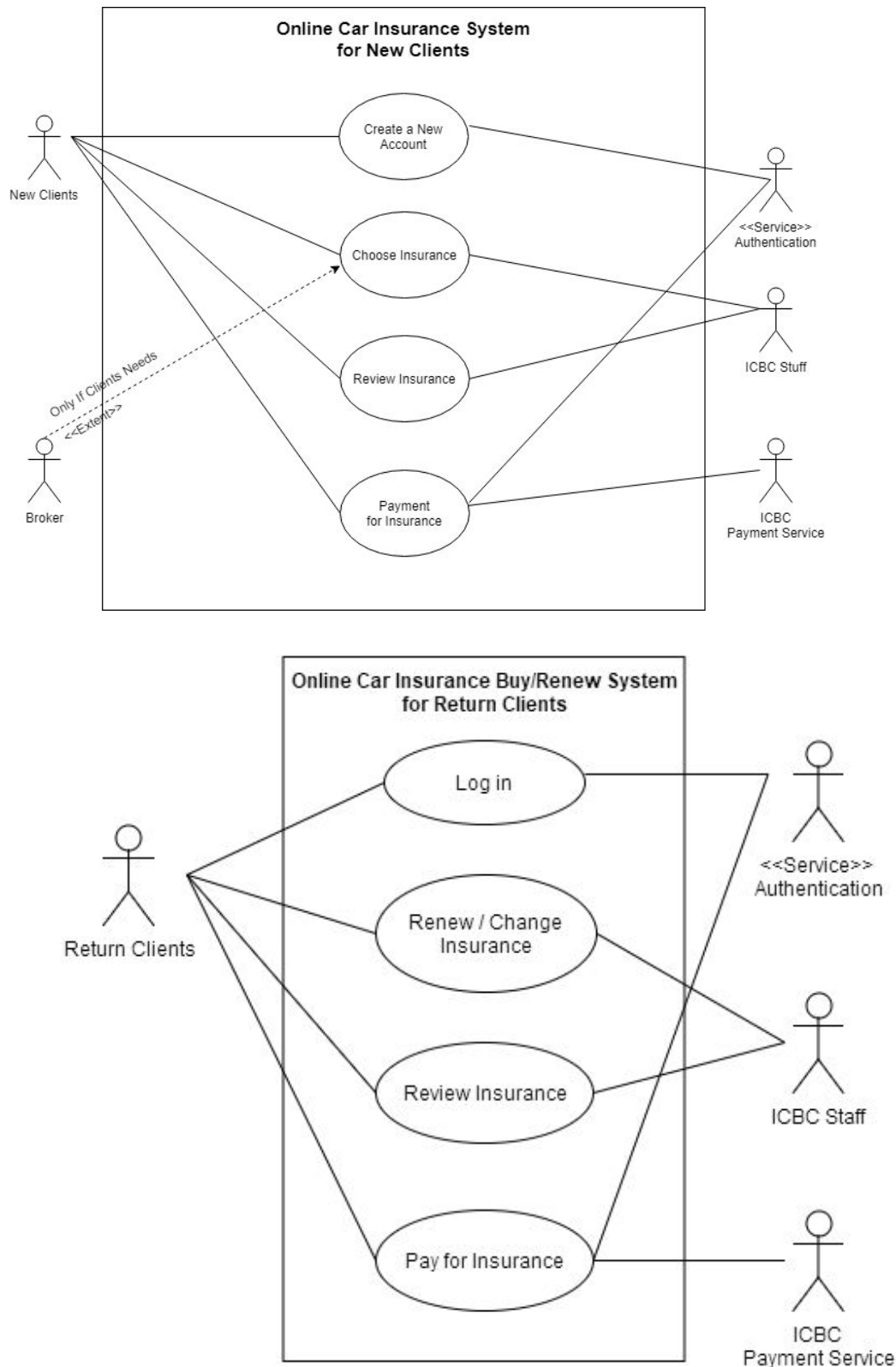
Acknowledgements

Our group would like to acknowledge and thank the following organization and people who have supported us on the project of the online car insurance payment and renewal system. First we would like to express our special thanks to our main client's organization (ICBC) that gave us the opportunity to do this project. During the project, ICBC gave their support, advices and guidance to us.

We would also like to thank b Van-Isle Auto Brokers who cooperate with us, and provide professional help in building the broker part in our system and website.

Finally, we would like to thank all of our audiences who attend to our pitch and final presentation. They gave us their comments that help us to improve our project.

Appendix A: New System Use Case Diagram



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Appendix B: New System UI Model

ICBC

http://www.icbc.com/home

ICBC

Policy Number [?]

License Plate Number

First Name

Last Name

Date of Birth

ICBC

http://www.icbc.com/policy

[View another policy](#)

Policy Info

Vehicle Info

Personal Info

ICBC

http://www.icbc.com/confirm

Transaction Confirmation

Existing Plan

New Plan

ICBC

http://www.icbc.com/confirm

Payment

New policy detail

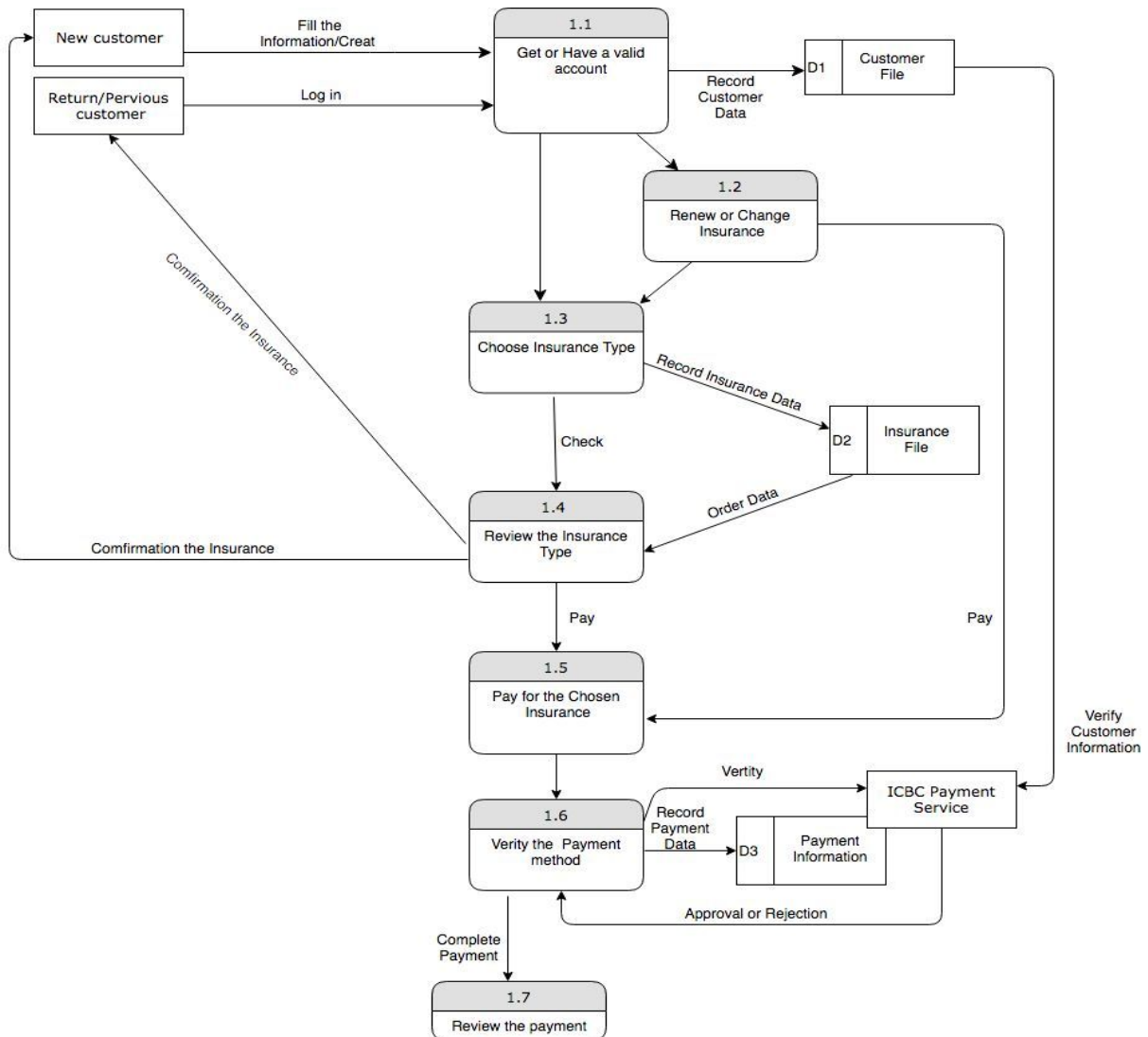
Payment method

☐ Visa ☐ Mastercard ☐ Debit

Card Number

Expire date

Appendix C: New System Data Flow Diagram



Appendix D

Here includes further explanation and tips to help getting familiar with the system.

User Characteristics

There are mainly three types of users that interact with the system: ICBC clients of the online car insurance system, brokers, and administrators from the operator.

The clients can use the online system to register their vehicles, purchase insurance package, and renew their policy. This means that the clients have to be able to create accounts, log in, choose the right insurance coverage, and make the payment. Clients can get relevant search result of basic and extended coverage that matches.

The brokers will be available through online chatting and “find a broker” according to client’s nearest location. Broker can help client to compare and customize insurance coverage to fit client’s individual needs.

The administrators only interact with the web portal to manage the running of the overall system. Administrator also manage the transaction process and information security between clients and the third-party payment platform.

Recommended Equipment

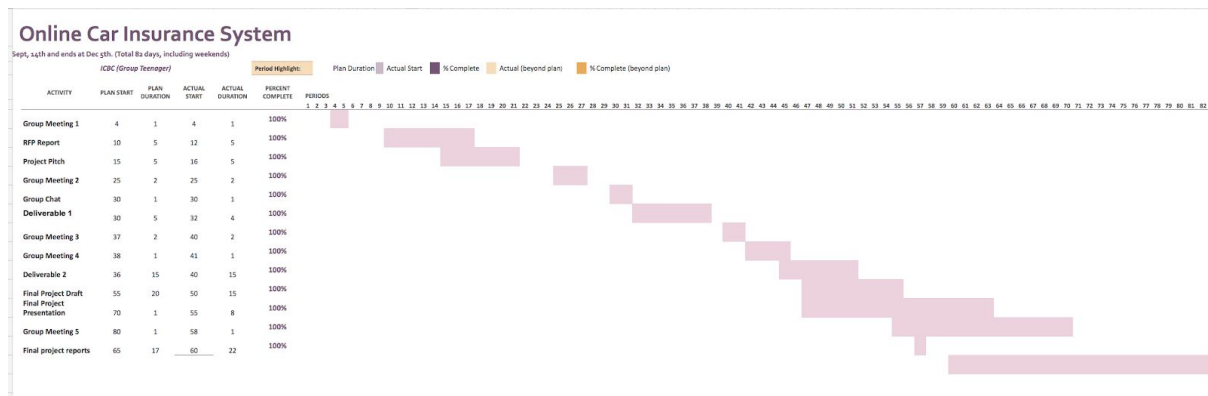
Since the solution system is web-based and there is no mobile application designed, there is no designated hardware, but only a computer for access to the online system. Also, the software needed is the Windows 8 OS system and GPS application in order to get geographical information when using “find a broker”.

Further Explanation on The System

Policy issue process will be break down into:

- Vehicle Registration: The process of registering a vehicle by the client before getting license plates and insurance
- Insurance Selection: The process of calculating premiums of insurance coverage according to the protection products and length of policy selected by the client
- Policy Approval: The process of determining whether the proposed policy will be approved or not by ICBC
- Pay Insurance: The process of client paying a premium for the approved policy

Appendix E: Weekly Status Reports



The project starts at Sept, 14th and ends at Dec 5th; our project timeline is shown below:

- Group meeting with client September, 17 (week 3)
- RFP and Project Pitch September, 25th (week 4)
- Group meeting 2 October, 6 (week 5)
- Deliverable 1 October, 12th (week 6)
- Group meeting 3 October, 20th (week 7)
- Group meeting 4 October, 27th (week 8)
- Deliverable 2 November, 6th (week 10)
- Final project presentation Last 2 weeks, in-class
- Group meeting 5 November, 27th (week 13)
- Final project reports December, 5th (last week)

Week 3	Met with client to determine the system and services that we would like to update
Week 4	Worked on the RFP which helped us to specify the system needs
Week 5	Defined our objective and initially analyze the benefits
Week 6	<ul style="list-style-type: none"> • Got use case diagram of new system done to describe sets of action perform in system • Deliverable 1 was done
Week 7	<ul style="list-style-type: none"> • Analysis of functional and nonfunctional system requirements • Conducted preliminary analysis for the alternative solutions
Week 8	Started the prototype design of user-interface of the web-based system
Week 10	<ul style="list-style-type: none"> • Added recommendation to client • Deliverable 2 was done
Week 12	Introduced our new system design and function to the class by final project presentation
Week 13	Conducted detailed benefit analysis and cost analysis
Last	<ul style="list-style-type: none"> • Went through last evaluation on the project

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week	<ul style="list-style-type: none">• Final report was done
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Conclusions

Through the course and agile system development, we as a team have mastered system development skills on how to gather system requirements, and design use case diagrams and data flow diagrams based on the requirement. Also we have learned various information gathering methods such as the interactive ones: interviews, questionnaires and surveys; and actually tried to ask the interviewee different kinds of questions relative to our proposed system: both the open-ended and close-ended ones, in order to receive the most effective and objective feedbacks as best as possible. The whole team spent time on studying the economic feasibility of how much it will cost on implementing such system and grasped an vague idea about what our future career will be look like.

Difficulties occurred inevitably as well. For example, time management was being a relatively critical one among all the obstacles we have encountered: rather than scheduling meetings according to different team members' timetable, we simple draft a rough meeting plan randomly. Thanks to that, those group meetings were sometimes either ended up with three or 4 team members showing up or just canceled because of time conflicts from the whole team. Similarly, we realized we should have met with the client representative more often to see if there are any possible updates on functional requirement: we never met with the client face-to-face except for the once on our first group meeting(as our weekly status report indicated). Finally, we think it was also worth conducting more use case testings and self cognitive walkthroughs on the system prototype, so we can better ensure the system's usability meet requirements.

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