Coursework 1
eCommerce Technology

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Introduction

This coursework assignment has been completed for the eCommerce Technology module at Heriot-Watt University. It involves defining an IDEF3 business process model for eBay.com[1]. A business process is a course of **events** consisting of one or more coherent **activities** which are necessary to deliver a **product or service** with a tangible **value** to a **customer**[2]. The main aim of the process model is to allow eBay, as a business, to understand the process flow on how a customer may use their website to browse and/or purchase goods. I will first describe the full process model as one large diagram, and then break it down into subsections.

Model Description

Users can browse and buy goods from eBay through their website interface[1], with the ability to browse in a number of ways. These include browsing by category and brand, as well as browsing the home screen which displays a number of links to different products that relate to the users' previous searches. Brands on eBay include, but are not limited to 'Toys R Us', 'Halfords', 'Office' and 'Tesco Outlet'. And categories include, but are not limited to 'Electronics', 'Fashion', 'Toys and Games' and 'Motors'.

In general, a user will start at the eBay homepage. They may or may not sign in to their account at this stage. From this page they are free to browse the products in any of the ways described above; by brand or by category. There is also the option to search for specific products through the search bar on this screen, which searches through the whole site for products matching the description given.

After searching for some product using the search bar a list of results is given[4], and these results can be filtered and refined by the user. Different filters can be made on different products, for example the filters for the search "bed" might include 'Brand', 'Main Colour' and 'Material' whereas the filters for a mobile phone case may include 'Colour' or 'Design and Finish'.

If the user chooses a product from the list they find, they have a few options. They can buy the product immediately by selecting the 'Buy it now' option, they can add it to their shopping basket[5] to come back to later, they can add it to their 'watch list' which keeps an eye on the bids that are put on that product, or they can add it to a 'collection' of their favourite products. It is important to note that a user **must be signed in** to add an item to their watch list or collection, or to buy a product. Some products can be bought outright for a set price; however, some must be bided for in an auction style setup.

The sign in screen[6] simply asks a user for their email address and password. After three failed attempts, a CAPTCHA image is also used for extra security. There are options for a user to reset their password and send a temporary password to their mobile phone if they forget their details. From this area of the website a user can also create a new account if they don't already have one.

Once a user is signed in, they can buy a product or group of products through 2 routes, either by going through the basket and selecting 'Proceed to checkout', or by selecting the 'Buy it now' option that was described before. They can remove items from their basket and/or change the quantity of items in their basket. Inside the checkout, a user will enter their payment and address details, the system will confirm these with the relevant authority (PayPal, PayPal Credit or a credit card company) and the order will be confirmed by the user. They will then be sent a confirmation email.

Assumptions

   I have not made any assumptions for this assignment. All the proceeding diagrams are based on the 'Model Description' above.

IDEF3 Syntax

   I have used the following IDEF3 syntax[7] in my business process model diagrams. For each diagram, assume the flow begins on the **leftmost** process, unless otherwise stated. The first process in the diagram will also have the **smallest 'ID'** number.
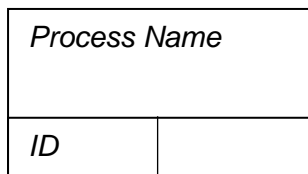
Process Name	
ID	

Each **process** or **Unit of Behaviour (UOB)** has a *Process Name*, which is essentially a label telling you what it does. Each process will also have an *ID* number. In the main process model, these will be numbered 1 to *N*, where *N* is the number of processes. In the break-down model of a specific process with id *M*, each process inside it will have an *ID* from *M.1* to *M.N.* I will use both the word 'process' and the acronym UOB to describe these objects in the diagrams.

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A **link** between two UOBs is shown using a unidirectional arrow. Flow along a link is in the direction the arrow is pointing, and this is the main way to show the order processes must be completed in.

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| O |
| & |
| X |
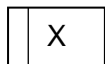
Junctions are used to describe points between UOBs where a number of different processes are possible. There are three types of junctions described in this document, OR-junction (denoted by 'O'), AND-junction (denoted by '&') and XOR-junction (denoted by 'X'. In an OR-junction, any of the processes after it and before a **synchronisation** (described below) can be carried out optionally, before transitioning to the next process. Similarly, in an AND-junction, all processes must be carried out before moving to the next stage, and in an XOR-junction, only **one** of the processes may be carried out before transitioning to the next UOB.

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| O |
| & |
| X |

A **synchronisation** is used to show that an AND, OR or XOR junction has been closed.

Overall Model

  Based on the syntax described above, figure 1 below shows the general business process model described in the 'Model Description' section. This model assumes the user is not signed in to begin with but, if they were, they would simply skip straight to the 'Signed in Browsing' process (id = 10). This process is the same as browsing when signed out, except with a more tailored experience, for example products will be advertised based on products that the user has purchased before. Processes with an asterisk (*) in this diagram will be explored more deeply later on. These include 'View Search Results', 'View/Edit Shopping Basket' 'Signed in Browsing' and 'Checkout'. I will be referring to the ID numbers for the processes later on in this report.
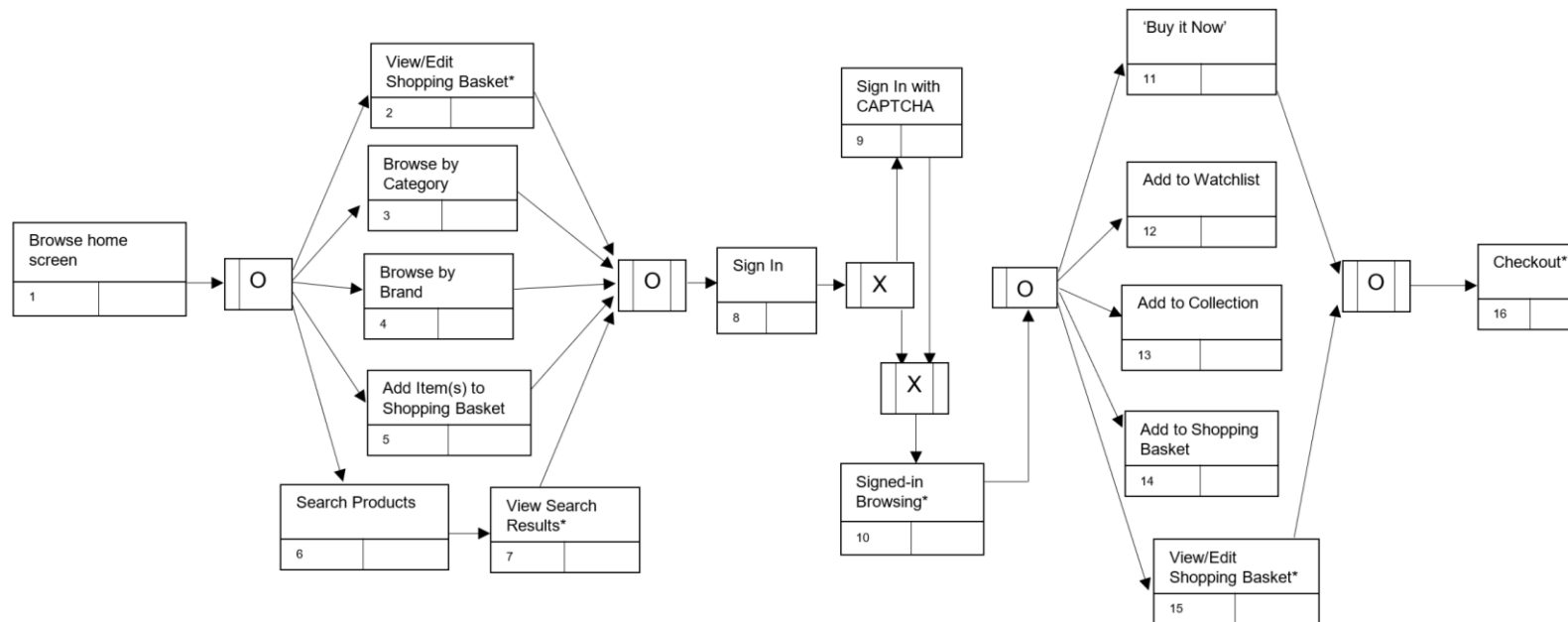
Figure 1 – Overall Business Process Model for a customer buying a product

2, 15: View/Edit Shopping Basket

A user can view and edit their shopping basket when they are signed in and when they are signed out. However, if they want their products to be saved in the basket after they close their browser, they must be signed in. Similarly, a user must be signed in if they would like to purchase any of the products through the 'Checkout', which is a process described later.

Inside the shopping basket, a user can remove items, edit the details of an item (for example a shoe size or colour), or edit the quantity of an item. They can leave the shopping basket by navigating back to the website or by proceeding to the 'Checkout' process. A user may not want to buy a certain product at that time, but may want to buy others. To allow this, there is an option to save items for later, meaning it stays in their shopping basket but won't be sent to the checkout unless they move it out of saved items again.
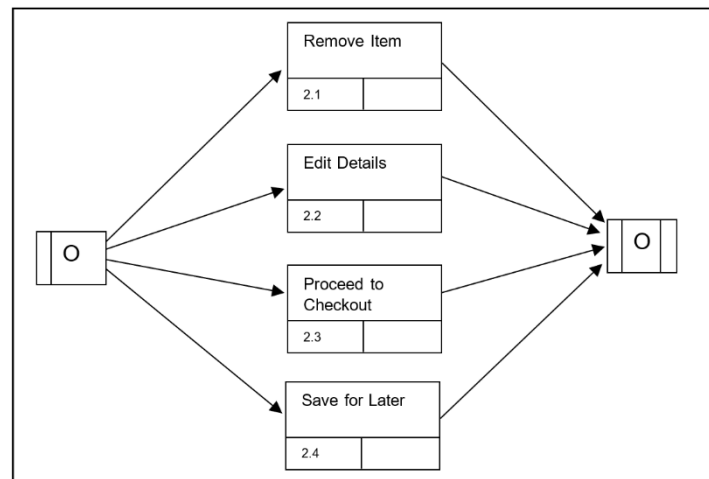

Figure 2 – Process model within View/Edit Shopping Basket

7: View Search Results

   After using the 'Search Products' process, a user will be provided with a list of results relating to their query. Inside the 'View Search Results' process, they can view this list. They can also select a specific item to view from the list, they can filter the results based on a variety of different parameters, and they can sort the list based on price and nearest match. In addition, there is also an option to group similar items together from the list.
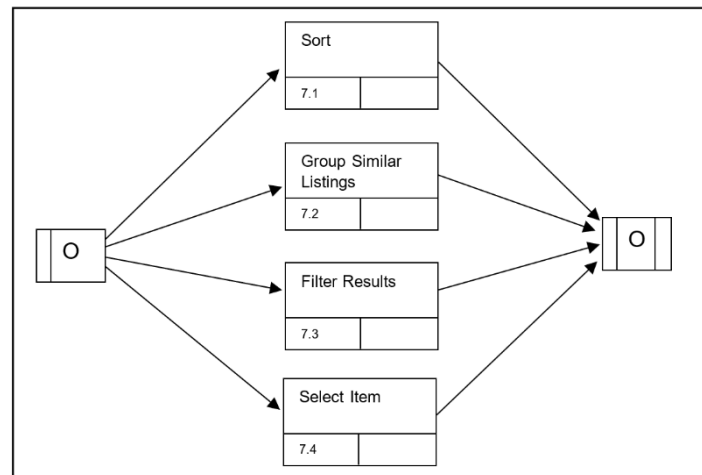

Figure 3 – Process model within View Search Results

10: Signed-in Browsing

   This is much the same as signed-out browsing, which includes the processes from the 'Overall Model' (page 4) with ID's 1, 2, 3, 4, 5, 6 and 7. However, when a user is signed in, products advertised will be tailored to fit with the user's previous searches and interests. They can proceed to processes with ID's 11, 12, 13, 14, 15 and 16 without the need to sign in again. Also, when a user is signed in, the products advertised will be personalised based on their previous browsing and purchase history[3].
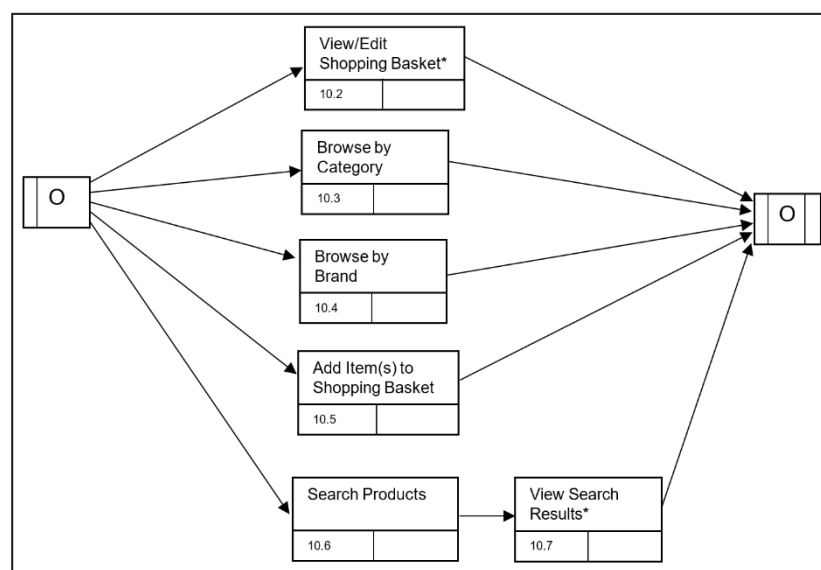

Figure 4 – Process model within Signed-in Browsing

16: Checkout

The 'Checkout' process is where a user is able to purchase a product or group of products. They must be signed-in to access this option. Inside the checkout, a user has three payment options (PayPal, PayPal Credit, Bank Card) – only one can be used. They must enter payment details and address details to complete a purchase, and when the purchase has been completed they will see a confirmation screen and receive a confirmation email for their order.
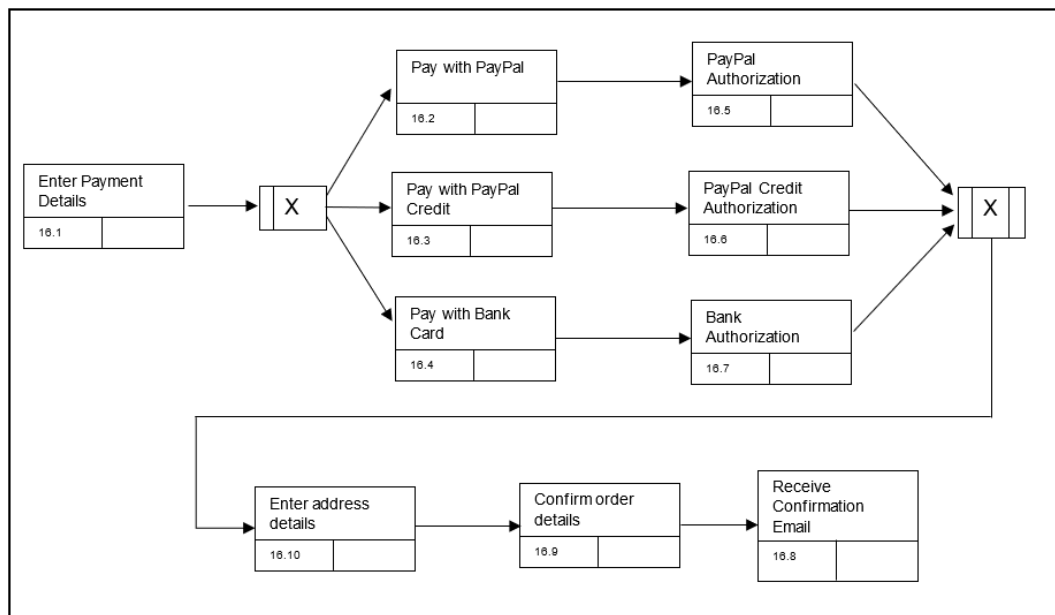

Figure 5 – Process model within Checkout

Conclusion

To conclude, in this report I have used an IDEF3 business process model to describe the process flow on how a customer may use eBay.com to browse and purchase goods. I have done this by carrying out independent research and writing a full English description initially. My research consisted of navigating through eBay.com and taking notes, then creating an account and purchasing some products. This meant I could get first-hand information from my own (customer) point-of-view.

After that, I created a diagram showing the 'Overall Process Model' – in other words a model that described the process in general. In the later sections I have drawn models for processes inside the overall model that could be expanded. These include 'View/Edit Shopping Basket', 'View Search Results', 'Signed-in Browsing' and 'Checkout'.

I feel that the business process model in this report describes the process clearly, and in a way that would be easy to read and understand for management at eBay.com.

References

1. eBay [online]. Available from http://www.ebay.co.uk/ [Last Accessed 21st February 2018].
2. Christofer Tolis, Anders G. Nilsson Advancing Your Business: People and Information Systems in Concert, EFI.
3. eBay. *Using AdChoice* [online]. Available from https://pages.ebay.co.uk/help/account/adchoice.html [Last Accessed 21st February 2018].
4. A search example. Searching for a "woolly hat" https://www.ebay.co.uk/sch/i.html?_from=R40&_trksid=p2050601.m570.l1313.TR12.TRC2.A0.H0.Xwoolly+hat.TRS0&_nkw=woolly+hat&_sacat=0.
5. eBay Shopping Basket [online]. Available from https://cart.payments.ebay.co.uk/sc/view [Last Accessed 21st February 2018].
6. eBay Sign-in Screen [online]. Available from https://signin.ebay.co.uk/ws/eBayISAPI.dll?SignIn&ru=https%3A%2F%2Fcart.payments.ebay.co.uk%2Fsc%2Fview. [Last Accessed 21st February 2018].
7. IBM Knowledge Center. *Modelling Business Processes with IDEF3* [online]. Available from https://www.ibm.com/support/knowledgecenter/en/SS6RBX_11.4.2/com.ibm.sa.bpr.doc/topics/tovmdlprocidef3.html [Last Accessed 21st February 2018].