1 Adaptive Systems
1.1 Personalized Web-Tasking Applications: An Online Grocery Shopping Prototype

Hausi A. Muller proposed the feasibility and effectiveness of context aware self adaptive software in personalized web tasking (PWT), The application, grocery shopping was considered for personalized web tasking because the contents of the shopping list have to be regularly updated and the activities must be performed regularly. FIgure 1 illustrates the manual web task process to be achieved in order to fulfil a grocery shopping goal. These tasks are dependent on one another. In task 1, the user logs into the preferred grocery list application to find the shopping list. For task 2,3- the user manually selects the proper grocery stores to purchase every item and creates independent sublists labelling the items. In task 4, the user performs a purchase. In task 5, the user the user decides on performing 6 or 7 based on if the store provides online purchase. If task 6 is selected, she checks out the desired items, if 7 is selected, the calendar reminders are set. It can never happen always to go to the best route of the grocery store, so, Task 8 is performed to repeat the process starting from task 2.inally in Task 9, the user decides whether the process is finished and manually updates the grocery shopping list application.
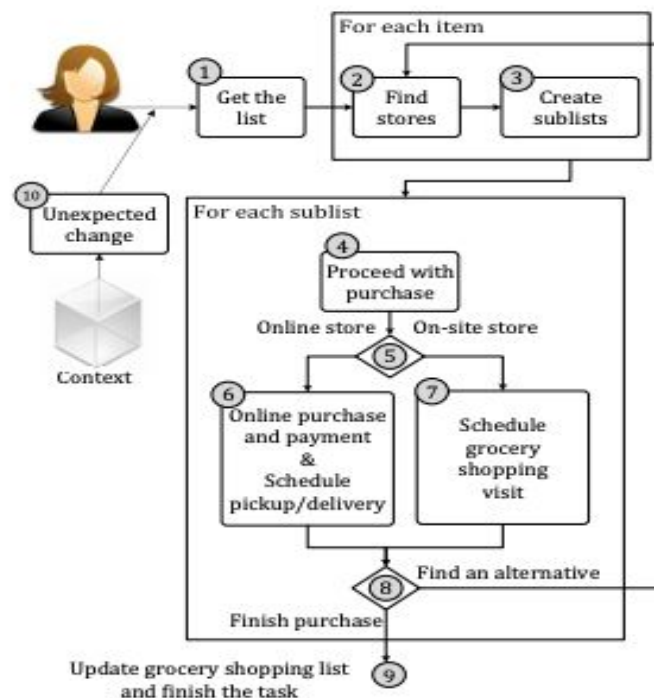

Figure 1. Manual web-task process of a Grocery Shopping scenario

In this, two runtime modelling approaches in relation to adaptive application were proposed, personalized web tasking (PWT) and Goal-Oriented Context-Sensitive WebTasking (GCT) model.

The dynamic systems such as self-adaptive software, requires monitoring and adaptation procedures which are performed at runtime. The runtime models which represent the behaviour of the system are taken into account by adaptive systems. The PWT model is used to represent the concepts web task sequence, resources and satisfaction properties and the GCT model represents the evolving web-tasking personal goals of the user. Two goals were set: 1) The numbers of items left in the grocery shopping list application at the end of the web tasking execution should be less than 20% of the original. (2) The total amount spent in the groceries purchase should be within a $200 budget.

1.2 AN ENHANCED RECOMMENDATION SCHEME FOR ONLINE GROCERY SHOPPING

Yi-Jing Wu and Wei-Guang Teng developed a new recommendation scheme for online shopping by taking into account two additional considerations: product replenishment and product promotions because this new scheme will result in a new recommendation list which fits the user's desires, needs and budget considerations and hence, are able to finally boost the transactions.

The core of providing this system is a personalized recommendation algorithm. This algorithm studies the online shopping behaviour and recommends the items to the consumers while doing online purchasing. The consumer preference are performed by taking into account three aspects: product replenishment, product promotion and individual interest.

At first,a bipartite network is constructed based on the history of purchase of all users to calculate the individual interest. Most of the daily needs of a particular consumer are consumable and are targets of grocery shopping. Therefore, consumers may buy the same product repeatedly, this is called ' product replenishment '. When the required product is going to be exhausted, the purchasing intent of a consumer becomes firm. In this work, Yi-Jing Wu ,thus proposed a statistical model to estimate this factor of product replenishment.