Healthy Food Basket project: Web and iPad solutions for nutrition and dietetics sector

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INTRODUCTION
We will present the development of a web and iPad application that is aimed at enhancing the research process of the Victorian Healthy Food Basket project. This is the first customised solution developed for this area of research and it is hoped that the solution will be adapted by similar research projects conducted by other states and territories around Australia.

THE VICTORIAN HEALTHY FOOD BASKET RESEARCH PROJECT
Access to an affordable and nutritious food supply is recognised as an important determinant of people’s nutrition and health outcomes. While the Australian consumer price index monitors the changes to food costs, no national tool exists to investigate the cost, availability or quality of health foods. The Victoria Healthy Food basket tool was developed in 2007 by Nutrition and Dietetics researchers at Monash University to measure and monitor the cost and affordability of a healthy basket of food for typical Victorian families. The basket of food contains 44 items from five core food groups and non-core foods, and meets the nutritional requirements of four different family types for a fortnight[1].

The research process consists of 3 main stages, i.e. Planning and Set-up, Data Collection and Analysis and Reporting. Currently, a manual system is used for data collection and analysis is conducted using MS Excel.

NEED FOR INFORMATION TECHNOLOGY SOLUTION
The predominantly manual, process has resulted in number of pain points such as:

- **Inaccuracies during data collection**: During data collection field workers have to constantly refer to a four page document to keep abreast of the data collection rules, while manually writing down the prices in busy and crowded stores. These factors may have led to human errors, resulting inaccuracies in the data collected.

- **Inaccuracies in the data entry process**: Inaccuracies during data entry due to human errors and illegible writing during data collection.

- **Inefficiencies in analysis and reporting**: Currently, the researchers do not have a mechanism to easily filter data by collection round, area or store type. Comparisons of prices of stores, areas and family types are conducted by manually sweeping through numerous MS Excel data sheets. This is also the case for identifying complete and incomplete data sets. Additionally, the storage of data in researchers’ individual computers does not facilitate collaborative analysis and a reporting mechanism to easily disseminate the results to interested parties is also lacking.
THE PROPOSED SOLUTION
As shown in Figure 1 the proposed solution facilitates all three stages of the research process, i.e. Planning and Set-up, Data Collection and Analysis and Reporting. The solution consists of a web application and an iPad application.

![Data Store Diagram]

Figure 1: Proposed solution

THE WEB APPLICATION
The web application is aimed at enhancing the research activities of Planning and Set-up and Analysis and Reporting stages. The data managed by the web application will be stored in a secure server that can be accessed by multiple researchers, thus enhancing collaboration, security and effectiveness at both stages of the research processes. The researchers will have the ability to filter data using multiple parameters such as data rounds, dates, area and family types. Cost analysis reports will be automatically produced and will be available to all interested parties through the web.

IPAD APPLICATION
The iPad application will facilitate the data collection process. A majority of the data collection rules will be automated thus improving the accuracy of data. Upon completion of the data collection the field workers will be able to upload the shopping lists to the central data store, thus eliminating the need for manual data entry.

This application will be implemented as a smart client; with the software installed locally on the device having the ability to seamlessly manage data capture and data upload even when connectivity to the mobile network is not available.

REFERENCES

ABOUT THE AUTHORS
Dr Claire Palermo is a Lecturer in the Faculty of Medicine, Nursing & Health Sciences at Monash University. Claire is an Accredited Practising Dietitian who came to Monash with over 10 years experience as a dietitian and public health nutritionist. Her PhD involved evaluation of a mentoring program for public health nutrition workforce development. Her research interests include undergraduate and post graduate health education and assessment of access to nutritious food.
Mr Anthony Beitz is the Manager of Monash University’s e-Research Centre. He has extensive experience in the selection, reuse, development, and deployment of eResearch software infrastructure. He has been project and product manager of major eResearch projects, e.g. DART integration and the ARCHER portal and dataset, and extensive consultancy experience with both technical & non-technical groups. Prior to his appointment at Monash he had over a decade in research and development with Telstra, managing the development and deployment of a range of software tools and technologies.

Dr Dharani Perera-Schulz is a User Experience consultant at Monash University’s eSolution department. She has expensive knowledge and experience in user centered design, interaction design, multimodal interfaces, assistive technologies and information architecture. Prior to her appointment at Monash University she has completed a PhD in Human Computer Interaction at Deakin University, Australia and Middlesex University, UK.

Ms Sindhu Emilda is a Senior Software Developer at the Monash e-Research Centre. She has many years of software design and development experience. She received her Bachelors in Electrical & Electronics Engineering from India and Masters in Computer Science from National University of Singapore. She joined Monash University in 2011 and has delivered solutions to research projects such as Omero and Kashgar. Prior to joining Monash, she worked for many years in research software development in the Grid computing area at A-Star Institute of High Performance Computing.

Ms Anitha Kannan is the Program Manager (Software Development) at the Monash e-Research Centre. She is responsible for the planning and delivery of the software development projects undertaken by the Monash e-Research Centre. She joined Monash University in November 2011 and has been managing the delivery of multiple projects funded by the Australian National Data Service. Prior to this appointment, she had a 15-year career in the Information Technology industry with experience in software development and project management in leading organisations like Infosys Technologies, Hewlett Packard and Texas Instruments.