

Head Office System - Web Application Upgrade

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ABSTRACT

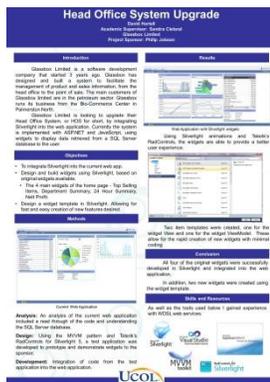
The Head Office System is a web application designed and built by Glassbox Limited. The system is designed to show a high level summary of data gathered from many point-of-sales, which is stored in a multi-tenanted SQL Server database. The system takes information from the database and displays it in an ASP.NET webpage using four widgets. Each widget has a separate function and displays its data in a unique manner. Glassbox wished to upgrade the system to provide a richer user experience and remove the reliance on JavaScript. The objectives of this capstone project were to convert the existing widgets into Silverlight widgets, and display the new Silverlight content within the ASP.NET web application. Additionally, Glassbox required a widget template be developed so new features would be easier and quicker to implement. The project was a success with all widgets being converted to Silverlight and deployed to the Glassbox production server. The widget template has provided Glassbox with a quick, easy way to add new features to the Head Office System.

Categories and Subject Descriptors

D.2.7 [Distribution, Maintenance, and Enhancement] – Corrections, Documentation, Enhancement, Extensibility, Portability, Restructuring, reverse engineering, and reengineering
H.3.5 [Online Information Services] Commercial services, Data sharing, Web-based services

Keywords

System Upgrade, Silverlight 5, C#, XAML, MVVM



This poster paper appeared at the 4th annual conference of Computing and Information Technology Research and Education New Zealand (CITRENZ2013) incorporating the 26th Annual Conference of the National Advisory Committee on Computing Qualifications, Hamilton, New Zealand, October 6-9, 2013. Mike Lopez and Michael Verhaart, (Eds).

1. INTRODUCTION

Glassbox Limited is a software development company based in the Bio-Commerce Center in Palmerston North. Glassbox started operations in 2009. Glassbox has designed and built a system to facilitate the management of product and sales information, from the head office to the point-of-sale. The main customers of Glassbox limited are in the petroleum sector. Glassbox Limited wished to upgrade their Head Office System, or HOS for short, by integrating Silverlight into the web application. The original system was implemented with ASP.NET and JavaScript, using widgets to display data retrieved from a SQL Server database to the user.

2. OBJECTIVES

The capstone project objectives were:

- Design and build Silverlight widgets, based on original widgets available in the web app (Top Selling Items, Department Summary, 24 Hour Summary, Nett Profit)
- Design a Silverlight widget template. Allowing for fast and easy creation of new features desired.

3. METHOD

3.1 Analysis

Analysis of the existing web application included a read through of the code and understanding the SQL Server database. The code read through provided an understanding of the business's coding standard and coding practices. The SQL Server database uses the ARTS data model. The Association for Retail Technology Standards (ARTS) of the National Retail Federation, has developed standards for the retail industry since 1993, and is an international membership organization [1].

3.2 Design

Use of the Model-View-ViewModel pattern was a requirement. The MVVM Light Toolkit was provided. The toolkit is a software plugin for Visual Studio created and maintained by GalaSoft [2]. The toolkit provides code snippets and item templates to help accelerate the design of programs using the MVVM pattern.

Telerik's RadControls for Silverlight 5, were also provided for use [3]. RadControls is a collection of libraries and controls designed for rich business applications using Silverlight.

3.3 Development

An iterative approach was taken to development, with widgets initially being prototyped in a test application. The test application used WDSL web services to extract the data from the database. On a weekly basis the widgets were demonstrated to the project

sponsor and feedback was used to improve or redesign the demonstrated widgets.

Once the prototyped widgets were approved by the sponsor the code from the test application was integrated into the web application.

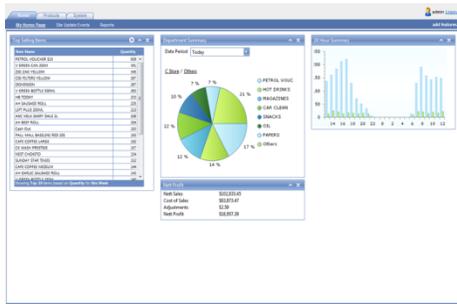


Figure 1. Original web application

4. RESULTS

Six widgets ended up being designed and integrated into the web application, as well as a dashboard that contains the widgets. Each widget and the dashboard has a View and an associated ViewModel. The four existing widgets in the web application were redeveloped in Silverlight and two new widgets were created. The six deployed widgets were:

- Top Selling Items
- Department Summary
- 24hr Summary
- Nett Profit
- Nett History (new)
- Nett Comparison (new)

All data is retrieved from the database through a WDSL web service, and the web service utilises stored procedures.

The widget template was created allowing all widget ViewModels to inherit from a base widget class (vmWidgetBase). For the template, the colour scheme and button styles are stored in a resource dictionary (rscWidgetDictionary.xaml) so all widgets look similar and any changes to the resource dictionary are

reflected in all widgets. Creating the View and the ViewModel for the templates will automatically create a widget with basic minimise and menu animations. A widget template user guide was also created.



Figure 2. New web application

5. CONCLUSION

The homepage dashboard in the Head Office System has been redesigned in Silverlight utilising the MVVM pattern. Many of the features of the original application have been retained, while also creating a better user experience through animations. A similar interface to the original was implemented so to aid existing users with using the new system. The widget template provides Glassbox Limited with the means to quickly produce a blank widget that has animations, speeding up the implementation of new features.

6. ACKNOWLEDGMENTS

Our thanks to Phil Jobson and Mike Mudford at Glassbox Limited for their time and providing a valuable learning experience

7. REFERENCES

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- 2 Bugnion, L. (n.d). MVVM Light Toolkit. Retrieved from: <http://www.galasoft.ch/mvvm/>
- 3 Telerik. (n.d). RadControls for Silverlight. Retrieved from: <http://www.telerik.com/help/silverlight/introduction.html>