Rhodes University

Department of Computer Science

Computer Science Honours Project Proposal

Principle Investigator

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Title of Project

A comparative study of JME vs. Flash Lite for mobile data services.

Mentoring

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Support

Department of Computer Science, Rhodes University.

Objective of Research

The main aim of this project is to compare the development of mobile phone data services with two major technologies namely, Flash Lite and JME (formerly J2ME). The comparison focuses on the mobile phone API development life cycle. This includes the mobile development environment, deployment environment, application efficiency, distribution environment, application compatibility, application maintenance and application extensibility. Quantitative conclusions such as the number of lines of code written and execution speed will be drawn from the API development life cycle, as well as qualitative conclusions such as platform dependency, language used and development tools utilised. This should lead to a conclusive decision as to which of the two technologies is more efficient for the creation and deployment of content and interfaces to mobile phones.

Background/History of the Study

In the early 1990s, mobile phones were basic devices designed with voice as the core functionality. At that time UI (User Interface) design and platform standards for content creation were not taken into consideration due to technological limitations. However, the advancement of technology brought about enhanced mobile phone functionalities and these include mobile phone data services. A mobile phone data service is any service on a mobile phone other than voice calling. The first commercial mobile phone data service was an SMS (Short Message Service) sent over the Vodafone GSM network in December 1992. These mobile data services turned the simple mobile phone into an extremely intelligent device. OEMs (Original Equipment Manufacturers), content developers and mobile operators were faced with significant challenges in the ability to quickly and easily create, deploy, and manage content and applications ranging from the mobile phone user interface to vibrant and user-demanded rich applications. In order to maintain economies of scale, prevent time- and cost-intensive development cycles, and improve the overall customer experience, these companies needed a solution to ensure the rapid and efficient creation, deployment and management of custom content on mobile phones. Flash Lite and JME are two technologies, highly popular among OEMs, content developers and mobile operators, which provide development environments that address the challenges highlighted. The intention of this project is to make quantitative and qualitative conclusions detailing which platform provides optimum efficiency in addressing these challenges. By employing the optimal platform, mobility companies will inevitably maximise on their market sales.

Approach to the Study

An intensive literature review is initially required. Afterward, research into the selected development environments, which include Macromedia Flash Professional 8 and JME Netbeans 5.5 will be conducted and discussed. It will also be required to become familiar with Java (micro edition) and ActionScript. Key features offered by Flash Lite 2.1 and JME will also be highlighted and compared. Amongst these features, a numerous number of APIs (application programming interface) exist in each platform. Examples include the Mobile media API (JSR 135), the Advanced Multimedia Supplements API (JSR 234) and the Java binding for the OpenGL API (JSR 239) under the JME platform, and Shape drawing ActionScript API, Multimedia API and Persistent data API under the Flash Lite 2.1 platform. Accordingly, this research project takes an experimental system building approach to computer science, in which a prototype incorporating selected APIs is developed under both platforms, to test the effectiveness of competing ideas and hypothesis. Quantitative and qualitative conclusions will be drawn from both the software engineering process

and run-time target system from the construction of the prototype application. Quantitative examples include the execution speed and the number of lines of code written, whilst qualitative examples include the languages used, platform dependency and GUI design interfaces amongst others. From these qualitative and quantitative results, a conclusive decision will be made as to which is the optimal platform for the development of mobile phone data services. A time frame will be drawn enabling synchronous and efficient management of stages outlined in the project.

Information to be Derived/Deliverables

In order to maintain economies of scale, prevent time- and cost-intensive development cycles, and improve the overall customer experience, mobility companies need the efficient and relevant tools. The conclusion drawn at the end of this project will specify which platform between Flash Lite 2.1 and JME provides optimal results and a mobility company may use this result to increase data average revenue per user (ARPU) inherently increasing market sales. The results obtained may also be used to improve on both platforms, producing enhanced editions.

Equipment Requirements

The computer software required will be Macromedia Flash Professional 8, JME Netbeans IDE and Flash Lite 2.1. A Bluetooth adapter and USB dongle will be required to transfer data from the mobile phone to the computer. A mobile phone with high multimedia capabilities (preferably N80) will be required to run and test the two technologies.

Timeline for implementation

Start Date	Duration	Activity
5 March 2007	1 week	• Install Macromedia Flash Professional 8 • Submit formal written project proposal
6 March 2007	4 weeks	• Literature review • Seminar oral presentation
3 April 2007	2 weeks	• Comprehension of development environments
17 April 2007	8 weeks	• Prototype designing
12 June 2007	8 weeks	• Implementation and testing of prototype
7 August 2007	6 weeks	• Evaluation of prototype
18 September 2007	6 weeks	• Project write-up
30 October 2007	1 week	• Proof reading and Project Editing • Submit Project

Relevant publications

The following will be some of my valuable sources of information.

Vander Veer, E.A., *Flash 8: The Missing Manual,* O'Reilly Media, Inc, 2006.

Wright, M., *Enterprise Programming using Java Course*, Rhodes University, 2007.

Foster, G., *User Interface Design and Usability Engineering Course*, Rhodes University, 2007.

deHaan, P., *Learning ActionScript 2.0 for Macromedia Flash 8*, Macromedia Press, 2006.

Kerman, P., *Macromedia Flash 8 @work: projects and techniques to get the job done*, 2006.

Websites

Revert, G., *Designing for Mobile Learning: Clark and Mayer's Principles Applied*, 2006.
http://wasp.ict.ru.ac.za/references/docs/eLearning/Designing%20for%20mobile%20learning%20-%20clark%20and%20mayers%20principles%20applied.pdf
Accessed on 4 March 2007.

Flash 8 Documentation (2005).
http://livedocs.adobe.com/flash/8/main/wwhelp/wwhimpl/js/html/wwhelp.htm
Accessed on 1 March 2007.