

UNIVERSITY OF TURKU

Department of Information Technology

ARI SILÉN

Improving GUI application development using Qt Quick

Master's thesis in Technology, 73 pages

Software Engineering

January 2011

The speed of application development has increased due to new technologies giving effective tools and frameworks to work with. At the same time the number of different platforms has increased. Especially mobile operating systems have evolved rapidly, which has been possible due to the fast development of mobile hardware enabling possibility to run more complex operations and graphics run on small devices. Organizations are keen on publishing the developed software on multiple platforms, but porting an application to another platform takes a lot of resources.

Cross platform application framework Qt gives tools to develop applications for multiple platforms at once, without the need for porting the application code from one platform to another. Qt also offers a declarative module Qt Quick, which gives tools for creating application user interfaces using a declarative language, QML, which is designed to be easy to read and learn, thus making the user interface development faster, and even to hand out the user interface development responsibility to the user interface graphical designer.

Since Qt Quick is a very new addition to the Qt framework, no literature yet exists for developing applications using it. The Qt reference documentation describes coding conventions for QML, but no proper guidelines are presented for achieving a good architecture that is maintainable and dynamic, which is crucial when the application is targeted on multiple devices. This study investigates using of Qt Quick and QML for creating an application user interface by using examples, and defines a number of guidelines that should be followed in order to achieve good application architecture and a dynamic user interface, which is easy to modify and maintain. The presented guidelines are then used in transforming an existing C++ Qt application user interface into a Qt Quick QML user interface as a practical validation.

Keywords: Qt, Qt Quick, QML, declarative, GUI, user interface, Software Engineering, application development