



White paper

Smartphone application development

RT-RK Computer Based Systems LLC

Narodnog Fronta 23a
21000 Novi Sad
Serbia

phone: +381 (0)21 4801 100
fax: +381 (0)21 450 721
e-mail: info@rt-rk.com
www.rt-rk.com

Customer

The customer is a well known multinational computer software technology corporation with one of its subsidiaries being a very important embedded software provider for mobile devices.

Project Overview

The goal of the project is to create and implement a mobile application based on customer's idea and technology that would significantly improve user experience and re-use of services available on mobile devices today.

The project consists of three phases:

1. Concept development, feasibility study and creating a product prototype
2. Development of the product
3. Continuous feature development and support

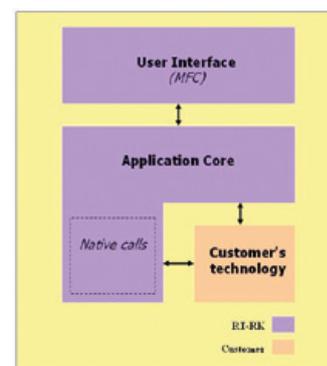
The initial concept has been developed by the customer, yet the concept was further discussed and developed during a two-week workshop in the customer's office in the USA. Two engineers from RT-RK attended and took part in the workshop. All attendees agreed that a feasibility study should be done, and that a product prototype should be created during that period.

The chosen target OS was Windows Mobile 5, smartphone edition. In order to create a product prototype in a limited time, the Microsoft .NET Compact Framework (.NET CF) was chosen, and it was decided that language C# would be used, with the help of native calls. Apart from general knowledge of developing applications for mobile phones on Windows Mobile, the team had a needed knowledge in TAPI, including Extended TAPI, Phone API, SIM Manager API, Short Message Service (SMS) API, Telephony Service Provider (TSP) API, Wireless Application Protocol (WAP) API, as well as File and Application Management API, and in development modules based on POOM.

The prototype was made in a very limited time as the deadline was the start of a large European mobile phone trade fair. The product prototype had all request-

ed features, and it helped both the customer and RT-RK prepare for the next phase - development of the final product. It was then confirmed and decided that the suggested technologies for the development are right: the product should be written in native environment due to higher flexibility of implementation for developers, as it would increase program execution speed and decrease program size. User interface elements within the product were to be based on MFC, and the language of the application would be C/C++.

The customer's core technology was about to be completely embedded in the core of the application.



Application structure

The UI has been customized upon the customer's request which lead to creation and implementation of custom controls of all graphic elements in the application. This has enabled the team to easily adopt additional customer's requests and ideas that came over the development process.

Periodic testing and thorough code examination have been applied during the development process. Portable modules have been tested separately with Insure++ to ensure high quality of the delivered product. To detect various errors, Application Verifier tool has been used to test the code to identify possible issues, while stress testing has been performed with Hopper tool. The application has been written to comply with a great number of compatibility and design criteria issued by Microsoft.

The third phase consisted of a continuous feature request development and support to the customer. This was the longest phase which included adding support

for Windows Mobile Pocket PC (touch screen and other UI changes), as well as moving the application to Windows Mobile 6 and 6.1 platforms, both Standard and Professional editions.

This paper covers the project life span of the first two project years. Over the time, the team included a project manager, three software engineers and a QA engineer. Customer requirements have been met in a timely fashion, and the work process was transparent to the customer via weekly conference calls and reports.

Notice

ALL INFORMATION PROVIDED IN THIS WHITE PAPER, INCLUDING COMMENTARY, OPINION, RT-RK DESIGN SPECIFICATIONS, REFERENCE BOARDS, FILES, DRAWINGS, SCHEMES, DIAGNOSTICS, LISTS, AND OTHER DOCUMENTS (TOGETHER AND SEPARATELY, "MATERIALS") ARE BEING PROVIDED "AS IS." RT-RK MAKES NO WARRANTIES, EXPRESSED, IMPLIED, STATUTORY, OR OTHERWISE WITH RESPECT TO MATERIALS, AND EXPRESSLY DISCLAIMS ALL IMPLIED WARRANTIES OF NONINFRINGEMENT, MERCHANTABILITY, AND FITNESS FOR A PARTICULAR PURPOSE.

Information furnished is believed to be accurate and reliable. However, RT-RK LLC assumes no responsibility for the consequences of use of such information or for any infringement of patents or other rights of third parties that may result from its use. No license is granted by implication or otherwise under any patent or patent rights of RT-RK LLC. Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. RT-RK LLC products are not authorized for use as critical components in life support devices or systems without express written approval of RT-RK LLC.

Trademarks

RT-RK and the RT-RK logo are trademarks or registered trademarks of RT-RK LLC in Serbia and other countries. Other company and product names may be trademarks of the respective companies with which they are associated.

Copyright

© 2013 RT-RK LLC. All rights reserved.