Mobile Platforms

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ABSTRACT

This thesis describes the development of two software platforms for creating innovative mobile applications: GapiDraw and OpenTrek. GapiDraw is a platform for high-performance graphics on mobile devices and runs on a variety of handheld hardware configurations, including Palm, Symbian and Windows Mobile devices. OpenTrek is a platform for networking on mobile devices, and supports communication over a wide range of networks such as wireless ad hoc networks and 3G/GPRS connections. The motivation for the work has been find ways to support the development of innovative mobile applications, a difficult task due to the lack of cross-platform application support, lack of rapid application development tools, and lack of prototyping support for mobile devices. The work consists of three phases. In the first phase several mobile applications were created to gain insight in how software platforms should be designed to support this process. In the second phase the two mobile platforms GapiDraw and OpenTrek were created based on design implications from creating the previous applications as well as feedback received from students, researchers and commercial developers through a public community forum on the Internet. In the third phase the two platforms were evaluated in various research projects as well as released as free downloads over the Internet, and they have this far been used in over 200 commercial applications, over 30 educational applications and in numerous research projects. The thesis has practical and theoretical contributions. The practical contribution comprises the applications that were developed to form the design requirements for the platforms, the two mobile platforms GapiDraw and OpenTrek, as well as the numerous applications that were created using them. The theoretical contribution comprises guidelines and a discussion on how to create mobile platforms to support the development of innovative mobile applications.

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