



Delivering an Out-of-the-Box Locative Experience ON MOBILE DEVICES

A WHITE PAPER SERIES ON 'CREATING COMPELLING LOCATIVE CONTENT'

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The availability of fast, accurate and affordable mass-market GPS handsets has raised the prospects for enhancing data ARPUs through a broad array of innovative consumer and enterprise location-based applications and services that handset OEMs and wireless operators can offer to their customers. In fact, over the past several years, the global community of independent software vendors (ISVs) has developed and brought to market an astonishing array of applications to enhance the mobile lifestyle, including local searching, turn-by-turn navigation, asset management, family finders and buddy finders and emerging applications such as location-based messaging, location-based games, photo blogging and social networking, among others. Yet despite the availability of some of these applications, proven success story of enterprise LBS applications of Nextel (Sprint) and the value location adds to a variety of mobile activities, the market awareness of consumer location-based services and adoption of LBS applications have not achieved nearly the same level of success as music downloads, SMS messaging or Blackberry-style push email.

In Asia, leading-edge operators like SK Telecom in Korea has successfully created consumer LBS business with a variety of innovative use of location context, however, most operators in the Americas, EMEA and Asia-Pacific are still looking for the "killer app" for location-based services, one that will ignite consumers' interest in location applications and translate into increased ARPUs. But consumers are not looking for stand-alone LBS applications, and most of them don't even know or care what LBS means. Instead, consumers would like to see the power of location be used to make their lives easier by enhancing the things they already want to do with their mobile devices. They want an out-of-the-box "locative experience" where location permeates everything they do with their mobile device.

Contrary to the popular wisdom, there will be no single killer application for location-based services, but rather success will come through the integration of a locative experience across multiple applications. SIRF believes this can be achieved by "platforming" the location context on mobile devices through a common, standardized set of location APIs and services all applications can use on all mobile devices. With this platform, developers of location applications can reduce their time to market and carriers will be able to more quickly provide consumers with a wider choice of LBS applications that are easy to get and easy to use, and deliver a rich locative experience right out of the box on any new mobile device.

USER EXPERIENCE IS EVERYTHING

Today, a plethora of services, content and applications is competing for users' attention on small screens around the world. But the ability to generate higher ARPUs will depend on how these services, content and applications are delivered and on how successfully they provide a satisfactory user experience.

One factor that greatly influences the user experience is how an application is delivered to the mobile device. One of the first delivery methods, still in use today, is the web browser, but browser-based applications have not really caught on because they tend to be slow and cumbersome to use. Downloadable applications have been more successful, especially for games and music, because once they are downloaded and stored, they run locally on the mobile device and are much more responsive, providing a user experience superior to that of browser-based applications. Unfortunately, however, only 10 to 20 percent of mobile device owners actually download and use any applications, perhaps because of the extensive effort required to find, purchase and download them.

By far, the best user experience is provided by the handset's native applications. Despite the availability of inexpensive data plans and Java- and browser-enabled handsets, the majority of a user's time is spent interacting with the handset's native applications – the built-in address book, calendar, to-do list, SMS messenger or other application. The user opens the handset, sees the icon and clicks on it and it's there. These native applications are used by 80 percent of mobile users almost 80 percent of the time, yet despite their popularity and contribution to the user experience, not much innovation has occurred in the past ten years to make any significant improvements to them.

AN OUT-OF-THE-BOX LOCATIVE EXPERIENCE

Today's LBS applications are stand-alone silos working completely independently of each other. Each application acts as if it owns the handset and has little regard for how it uses the handset's resources or how it affects other applications. Much worse, these applications cannot communicate with each other or work together in any way.

Perhaps this is a result of applying personal computer thinking to the mobile device world. On a personal computer, stand-alone applications are launched individually for specific tasks, such as accounting or word processing, and while they may be able to communicate with each other, it is often cumbersome or inadequate. As a result, computer users often find themselves having to enter names and addresses, for example, over and over again into multiple stand-alone applications because none of them can get this data themselves from the user's organizer application.

But what might be frustrating and time consuming in the PC world is completely unacceptable in the mobile device world. This kind of experience will frustrate the user, who will wind up not using any of the applications. A busy person seeing a reminder from their calendar application about a 2 o'clock appointment does not want to open a separate turn-by-turn navigation application and re-enter the address that's already in their calendar or address book to get directions. Instead, the on-the-go mobile user would like to be able to simply click on the reminder to get directions from their current location. The navigation application should automatically run in the background to provide the necessary functionality. Getting directions or locating a buddy from the address book should be just as easy, the to-do list should be able to alert the user to pick up the laundry when they are near the dry cleaners and a picture taken from a phone camera should be automatically tagged with the location and searchable by it.

Rather than being a separate application they have to run and interact with, LBS applications such as turn-by-turn navigation or a buddy finder should appear to the user to be an intrinsic part of the handset's basic functionality, integrated with and providing a useful extension to the native applications they use the most. Location-enabling the native applications built into the handset and providing the means to integrate them with other LBS applications makes location relevant to the real-world tasks and activities users engage in with their mobile devices, and provide carriers the best avenue for delivering an out-of-the-box locative experience and fulfilling the promise of this great technology.

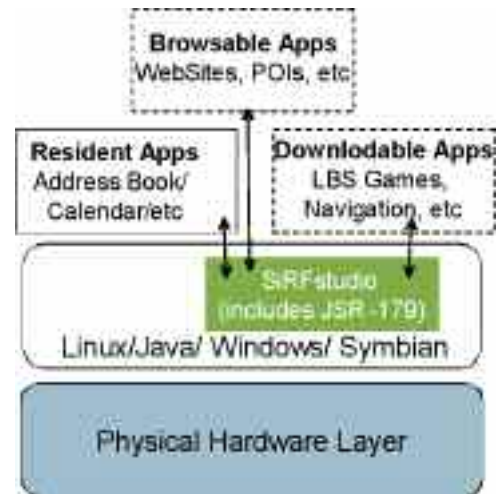
ACHIEVING THE VISION

The situation in the LBS market today is one of unrealized potential. Despite the availability of a tremendous array of location-enabled handsets, 80 to 100 companies offering LBS applications and other technologies available to provide complete end-to-end solutions, the LBS market has yet to achieve escape velocity. For carriers to achieve that out-of-the-box locative experience they need to attract more users, handset manufacturers and wireless operators must offer LBS application developers a standardized way to integrate and location-enable their applications.

Today, there is a tremendous diversity of handsets on the market, each using a different operating system and a different GPS chip set. To harness the location functionality built into each handset for use in their applications, software developers currently must use the location APIs each manufacturer has created for their handsets. Because of the dizzying array of handset-specific location APIs, developers are forced to create different versions of their applications for each handset. What has been lacking is a common location platform – a standard set of location APIs and integrating services – software developers can use across the diversity of handsets to location-enable and integrate their applications regardless of the underlying operating system or GPS chip set, or how the application is delivered.

This "platforming" of location – where the handset itself provides a rich set of location functions available to all applications through standardized APIs – simplifies and speeds software development by eliminating the need to create LBS mapping and other complex positioning features for each application, and allows applications to be written once and deployed across a wide range of handsets. By accelerating their time to market, LBS applications can be adopted on a wide range of devices in a very short time, reducing customers' fears of changing handsets, and allows carriers to be more competitive by enabling them to bring more applications to market more quickly.

Centralizing the location functionality also means applications can be smaller and use less memory, enabling more applications to operate on the handset. And because the location platform is also linked to the GPS chip set, it is able to more effectively manage power consumption and extend battery life.



SIRFSTUDIO AND SIRFECOSYSTEM

SiRF has created SiRFstudio to provide handset manufacturers and carriers with the location "platforming" and integration capabilities they need to deliver an out-of-the-box locative experience for mobile devices. It also provides a rapid LBS application development platform for software developers to embed sophisticated location capabilities into new and existing applications or services.

A superset of JSR-179, SiRFstudio is part of the SiRFecosystem, a comprehensive suite of tools and resources to speed development, testing and marketing of LBS applications that drive higher ARPU's and provide a compelling locative experience for users.

SiRFecosystem addresses the three most pressing needs of wireless operators, handset manufacturers and LBS application developers:

An easy-to-use API to develop applications – By providing a common and consistent set of enhanced APIs, that are standards compatible and reference implementations for embedding location across a wide variety of applications, networks, platforms and devices. SiRFstudio eliminates the need for each application to custom develop complex location retrieval, location based intelligence and transforms the development of location-based service and applications from a time-consuming, esoteric art limited to GPS/GIS experts to a rapid development process accessible to millions of Java, Windows and C/C++ developers globally.

An environment to test and verify the applications – An end-to-end LBS platform is a complex infrastructure comprising, at a minimum, location-enabled devices, network servers supporting standardized protocols such as user plane and control plane A-GPS, MLP and OpenLS, GIS engines and a mapping database. SiRFecosystem includes SiRFsandbox, a comprehensive, always-available test platform that delivers these required LBS components in a standard and globally accessible domain to help speed development.

A convenient way to bring the applications to market – After being tested and verified in the SiRFecosystem environment, new LBS applications enter the SiRF LocativeMedia Catalog, an online and print catalog of SiRFstudio-compliant LBS applications for consumer and enterprise markets that are ready-to-launch on compatible handsets from all major handset manufacturers and wireless operators in the SiRFecosystem community.

For more information about SiRFstudio and the SiRFecosystem, please visit <http://www.sirf.com/sirfecosystem>