© GSA

# A HELPING HAND

## DONNA REAY LOOKS AT SOME NEW RESEARCH THAT REVEALS ALTHOUGH SMARTPHONES ARE GOING TO CONTINUE TO BE THE MAIN DEVICES FOR USING LOCATION-BASED SERVICES, PERSONAL TRACKING DEVICES WILL BECOME INCREASINGLY POPULAR, PARTICULARLY IN HEALTHCARE APPLICATIONS

Today, nearly 50% of all mobile applications rely on global navigation satellite systems (GNSS) to provide positioning information and location-based services (LBS). And while GNSS applications in the LBS sector tend to favour smartphones and tablets, they also play an important role in other equipment, such as tracking devices, digital cameras and fitness gear. In addition, there are more specialised equipment geared towards users with a visual or physical impairment and the elderly. These users require more robustness and integrity, on top of the standard positioning and navigation services provided by LBS devices.

According to the latest edition of the European GNSS Agency's (GSA) GNSS Market Report, smartphones will remain the primary devices for accessing LBS. However, other categories of equipment are following with exponential growth. For example, personal tracking devices represent a high-value market niche that will gain prominence as technological advancements enable them to hit the mass market and increase the competitiveness of available solutions. The main applications for these devices include elderly/illness monitoring, family locators, offender monitoring and lone-worker protection.

Shipments of personal tracking devices are set to increase from 250,000 units in 2013 to 6.5m in 2023, and the currently fragmented market will progressively consolidate. Generated revenues are expected to grow from €20m to €660m during the same timeframe.

Tracking devices and wearables are becoming extensively used in the healthcare sector, where they support mobility and monitoring of impaired and elderly patients. Known as 'social LBS', these LBS applications improve the quality of life for disabled people by reducing the constraints/barriers of everyday life. The potential impact of social LBS applications is huge, considering that more than 1bn people have a form of disability and many of them could benefit from GNSS-aided technological support.

In this light, social LBS products and services represent an increasing opportunity to use GNSS to improve everyday life for the disabled. Specifically, they are well-positioned to provide solutions that reduce the barriers limiting their access to public and private services and infrastructures. However, the emergence of these social LBS applications depends heavily on the integration of multiple GNSS constellations into chipsets and receivers, which are necessary to ensure the required level of performance these applications demand.

Most of the social LBS products, apps and services currently on the market focus on improving or redesigning user interfaces, providing specific services, securing emergency assistance, and creating infrastructures for those individuals with visual, cognitive and upper/lower body impairments. For example, as regards to visual impairment, apps such as the Seeing Eye GPS by the Sendero Group can help people safely navigate using a smartphone's voice feature with automatic announcements of streets, intersections and various points of interest. There are also a handful of devices specifically designed to support the safe navigation of blind people, such as the Trekker Breeze+ handheld talking GPS by Humanware, for example. As regards to cognitive impairment,

several products are using GNSS tracking to help locate Alzheimer patients, including Keruve's GNSS watch.

When looking at body impairments, most apps focus on creating access to current IT interfaces and meeting everyday needs. For example, the GSA-funded INCLUSION project, perhaps the most relevant social LBS project realised in Europe, provides support for people with lower body impairment through a multi-function system specifically designed for this community. It includes all the features of a regular car navigation system, including vocal turn-by-turn instructions and route planning, but with the addition of specific information to support a person with disabilities. The result is barrier-free navigation that includes the generation of a route itinerary for an inter-modal journey and emergency call capability.

GNSS technology has the potential to usher in paradigm shifts in prevention and independence, improving the management of health conditions, meeting the needs of an ageing population and improving environmental conditions for the well-being of society. Although today's products, applications and services are mainly designed to address issues relating to mobility and infrastructure access, in the near future new emerging technologies could radically improve the life of individuals with disabilities and their ability to overcome limitations.

For example, technologies such as augmented reality, the autonomous vehicle, smart cities and more intelligent wearable devices could all have a substantial impact on numerous disability types.


However, these advanced social LBS applications demand an ever-increasing level of accuracy and robustness. To ensure these future applications are fulfilling these needs, the GSA is already working with manufacturers the creation of a dedicated GNSS chip for addressing the specific needs of social LBS. A project funded under the Fundamental Elements EU R&D programme will be launched in the upcoming months.

ADVANCED SOCIAL LBS APPLICATIONS DEMAND AN EVER-INCREASING LEVEL OF ACCURACY AND ROBUSTNESS

***Donna Reay is head of communications at the GSA (http://gsa.europa.eu)***