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THE FUTURE OF LOCATION BASED SERVICES: A PATENT LANDSCAPE OF EMERGING
TRENDS, TECHNOLOGIES AND STAKEHOLDERS

Abstract

Location-based Services (LBS) is a fast-growing segment of present-day smartphone applications. Right from basic road traffic information to contextual advertisements, they are promising to move beyond being mere apps to making a greater impact in various domains, like urban planning for smart cities, indoor navigation, healthcare & emergency services, precision agriculture, vehicle fleet management, Internet-of-things etc. to name a few. In short, location and navigation are set to drive Industry 4.0 ahead.

Upon a broad classification, the following major class of players emerge in the field of LBS: Global Navigation Satellite Systems (GNSS) providers such as GPS, Galileo, Glonass and NavIC; ground system technology developers for reference stations, timing systems etc; user equipment manufacturers; and, end-application creators, which could be anything from a simple restaurant recommendation system to a drone-based last-mile connectivity for a complex supply-chain solution or a fully autonomous driver-less car.

The aim of this paper is to carry out a detailed analysis of the present patent landscape of the key technologies of LBS, and assist the above-mentioned stakeholders to identify potential collaborators. Also, the study will facilitate the relatively newer entrants in GNSS like NavIC, and the existing players like GPS in providing modernized services. Since patents showcase the future direction of research by the technology owners, a landscape study will give a stakeholder a big picture of their position within their spectrum of interest. Apart from being a resource to determine R&D strategies, a patent landscape will not only help the stakeholders partner with the right technology owners, but also prevent pitfalls like duplication of efforts, unprofitable research investments and importantly, potential patent infringements.

Given the very broad spectrum of technologies that play major roles in LBS, the paper will divide the technologies into specific domains, analyse and provide insights into ownership of patents in each of the domains further categorized by International Patent Classification (IPC) system of World Intellectual Property Organization (WIPO). This will be of immense interest to not only private organizations, but also to the policymakers in defining their road-map for research, technology and product development.