Recent Advances in High Accuracy Positioning

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SUMMARY

In the early 1990s GPS was described as the 9th Utility, having the potential to provide positioning around the globe. Since the 1990s satellite positioning has been enhanced with the provision of the GLONASS, Beidou, and Galileo systems together with regional augmentation to become the GNSS system. The advent of the US 911 mandate created a market demand for ubiquitous positioning at an accuracy of 300 meters (90%), while the development of RTK technology enabled professional application of GNSS at centimeter accuracies.

With the introduction of smartphones the applications for GNSS positioning have grown with consumer level apps available for everything from navigation to distance measurement and area measurement and professional applications such as GIS data collection and asset management.

In parallel with the evolution of the smartphone, demand for improved positioning accuracy for automotive applications is being driven by the requirements of safety system initiatives and the evolution of semi and fully autonomous vehicles, bringing the need for sub-lane width accuracy.

This paper discusses the challenges and recent advances in positioning technology to meet the demand for improved accuracy for automotive and smartphone applications, addressing the needs of both the professional and consumer applications for ubiquitous high accuracy positioning.