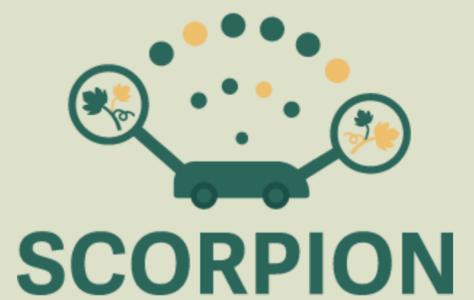


The Benefits of Galileo GNSS to Robot Operations in Vineyards



Cost effective robots for smart precision spraying

Galileo's suite of services, including OS-NMA, HAS, and the E5 AltBOC signal, offer enhanced security, high accuracy, and resilience against multipath errors, making them highly suitable for precise positioning and navigation in agricultural environments like vineyards.

Navigation Message Authentication (OS-NMA)

- Purpose: OS-NMA (provided by E1 and E5 signals) verifies navigation messages from Galileo satellites, mitigating potential spoofing attacks.
- Significance: Offers a clear distinction from other GNSS systems, enhancing security for mass market applications.

High Accuracy Service (HAS)

- Offered in E6 band: Expected to deliver 20-centimetre positioning accuracy.
- Free for Galileo Receiver Users: Intended to drive various business cases and solutions reliant on accurate positioning and time synchronization information across market segments.

Advantages of HAS Over RTK Solutions:

- Infrastructure: HAS eliminates the need for additional infrastructure like base stations required for RTK solutions, reducing space and power requirements, especially beneficial in remote rural areas.
- Interference Resilience: HAS achieves accuracies comparable to RTK without vulnerability to interference or spoofing due to the OS-NMA service.

Benefits of Galileo's E5 AltBOC Signal in Agricultural Environments:

- Robustness Against Multipath Errors: E5 AltBOC signal's unique modulation structure reduces errors caused by GNSS signal reflections from environmental elements.
- Usefulness in Challenging Environments: Particularly advantageous in agricultural settings with dense vegetation and uneven terrain, such as vineyards, minimizing positioning errors compared to traditional methods like RTK.

