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EVOLUTION AND INDUSTRIALIZATION OF A SBAS REAL-TIME PERFORMANCE MONITORING TOOL (EVORA)

Abstract

EVORA is a software tool developed by Iguassu Software Systems under an ESA contract. It is the successor of the Real Time Performance Monitoring Tool (RTPMT), which measures performance of Satellite Based Augmentation Systems (SBAS) in real time. EVORA introduces new functions, capabilities and interfaces. Moreover, the software was qualified to make sure it provides highly reliable results. The tool is being used by the ESA EGNOS Project Office, Thales Alenia Space France and other aviation end-users.

EVORA is multi-constellation and multi-frequency real-time processor. It works with real, simulated or offline data. Real data is read from RTCM streams broadcast over the NTRIP network through internet. EDAS protocol is also supported. An example of a source of simulated data is the Support Platform for EGNOS Evolution and Demonstration (SPEED). EVORA provides users with performance analysis over specific region or station. The user can see protection levels, availability, continuity, position error, ESA Stanford diagrams and ARAIM results. EVORA implements algorithms from the Minimum Operational Performance Standards for Global Positioning System (MOPS) and it can also compute the dual frequency solution using the SBAS L5 frequency.

The tool is divided in three parts: the receiver, the server and the client. The receiver is responsible for collecting data from input sources. The server then computes results for all SBAS regions and stations. It is written as a multi-process application capable of computing all analysis using inputs from different SBAS systems. The client is a Java applet visualizing results computed by the server. It can be comfortably run from the web browser without any additional installation. The client does not require any special computational power. Multiple users can be connected to the same server to visualize the results. Historical data can also be loaded.

EVORA users can subscribe for events occurring during the processing. Such an event can be the loss of SBAS signal, misleading information, etc. Event notifications can also be sent to users by email. EVORA creates automated HTML daily reports that include summary, statistics and graphs for all computed analysis.